LOUISIANA Conservationist

January/February 1989 $1.50

Virginia Van Sickle

Comments

As I write this, the dawn of a New Year is just breaking. I'm speaking figuratively, of course, but the expression is appropriate to the hopeful feeling with which we in the Department of Wildlife and Fisheries approach the coming months.

The past year has been a troubled one for us in state government as we grappled with problems that at times seemed insurmountable. Many of them were financial. Some of them surfaced unexpectedly in the form of unpaid obligations. The major source of the problems, however, related to revenue projections that did not account for declining oil and gas production, which comprised two-thirds of our income just three years ago.

As the Department of Wildlife and Fisheries is entirely self-supporting we were forced to set about "Biting the Bullet". There's an article with that title in this issue of the Louisiana Conservationist. Please read it. It was written by Undersecretary Bettsie Baker. It describes the sources of revenue for our department and the 13 million dollar decline in income that we have recently experienced. Every sportsman, commercial fisherman and conservationist in this state should understand the funding base for this department.

Despite cutting expenses to a point short of crippling the department's essential services, it was necessary, through layoffs, to eliminate fifteen percent of our filled personnel positions effective this January. Now this bitter step is behind us, the workload has been reapportioned, and Wildlife and Fisheries staff members are cooperating with such diligence and determination that better days most assuredly will come.

One bright spot has been the success achieved so far in putting your Louisiana Conservationist on a self-supporting basis. In ending the free distribution of this magazine, we invited our readers to share the cost of producing the magazine by paying for a subscription.

The response was not merely gratifying, it was overwhelming. Our small staff needed much volunteer assistance to keep up with the flood of orders. No one in the field of state-published periodicals could have predicted that we would garner a paid circulation of more than 40,000 in the first go-around.

We're so encouraged that we've set a goal now to shoot for 100,000. So tell a friend to subscribe. Better yet, do it for him or her. It's only $6!

Speaking of bright spots, you'll find many as you turn the pages of this bigger and better issue of Louisiana Conservationist made possible by your subscriptions.

Start a collection of the bimonthly issues of your new magazine. I started our Conservationist collection in 1971 and have referred to them many times.

When all is said and done, the real meaning of the Louisiana Conservationist success story is that you approve of what we have been doing, that you have demonstrated your approval by contributing financially and that you expect us to continue doing our best to serve you.

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LOUISIANA
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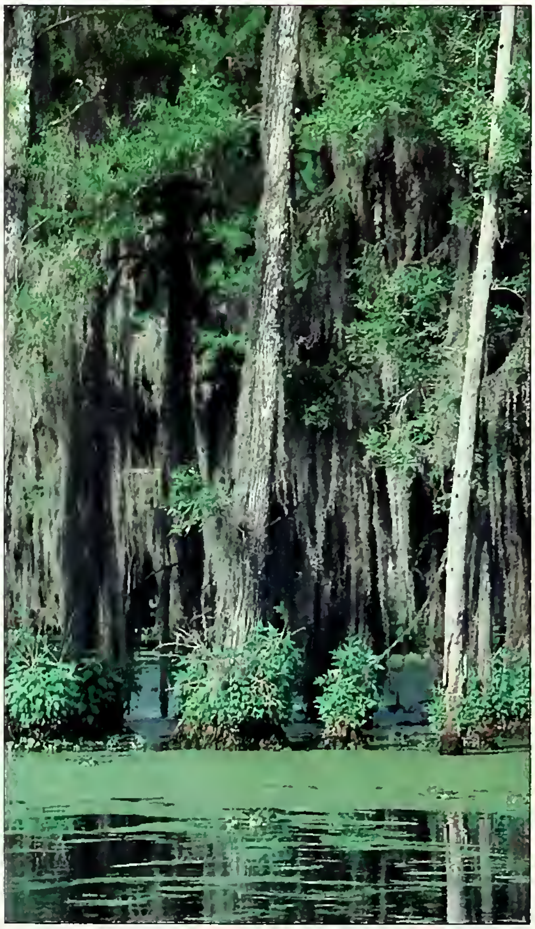


Louisiana Primer

BY MAURICE N. COCKERHAM

Not too long ago I chanced upon a coffee commercial on television. I was dumbstruck at some of the answers and non-answers offered in response to a pair of rather innocuous questions.

The supposedly comic inability of many Louisiana residents to identify the State Bird and the State Dog stirred me to poke a few queries of my own at some folk, including some school teachers.

To my chagrin, I learned that many of our residents have a rather poor picture of Louisiana as a geographical entity. Small wonder that many out-of-state folks think the whole state is a swamp with cities and homes built on stilts.

Even our school children do not receive an overall view of the natural diversity and wonder of their homeland. Oh, they learn about the Louisiana Purchase and they get a bit of the political and social history of the state, but they learn little or nothing about the distinctly varied natural worlds lying between the 29th and 33rd N. latitude lines.

Here, then, is one man's overview of the Bayou State. We're not going to dig up bones and rocks, though that is also a fascinating enterprise, and this does not pretend to be a scientific treatise. We're simply going to look at some of the variety in Louisiana's topography.

(By the way, the state bird is the brown pelican and the state dog is the Catahoula leopard dog, alias the Catahoula cur, but let's press onward.)

Louisiana can, from the outdoorsman's point of view, be roughly divided into four distinct areas.

On the southern side of the state, the Gulf of Mexico laps ceaselessly at Louisiana's fantastic coastal marshes. In a wide belt stretching from Texas on the west to Mississippi on the East and reaching as much as thirty miles inland from the Gulf, the coastal marshes encompass some four million acres.

Until this century, the great Mississippi River, the Sabine River, the Pearl, the Atchafalaya and others brought their burdens of silt and soil down to the coast, then spread out through the marshes, slowing their rush to the sea and depositing their rich sediment. In this way, the coastal marshes were rebuilt, nourished and expanded.

Under man's heavy hand, however, this natural land-building process has been disastrously altered. Channels have been dredged, straight and deep, to allow the quick and easy passage of ships. Levees have been erected to contain the river waters. The rich, silt-laden waters can no longer spread through the marshes.

Today, you can fly over the mouth of the Mississippi River and literally watch tons of rich sediment rush straight out into the Gulf to slide over the edge of the Continental Shelf...lost and wasted forever.

The ultimate effect of all this "progress" is that Louisiana is now losing its irreplaceable marshland at a frightening rate. The Gulf is washing it away and there is no silt and sediment to

There is a magnificent diversity of opportunity awaiting the outdoorsman in Louisiana that is matched by very few states.

Photograph by Steve Maslowski

Photograph by Steve Maslowski

replace it. There is no longer enough fresh water filtering through the marsh to hold back the salt water.

This is more than one-third of the entire nation's total coastal marsh area and it is an incredibly fertile, immensely valuable tract without which the Gulf of Mexico could well become a barren desert of salty water.

You see, the coastal marsh is the indispensable nursery for almost all the fish, shrimp, crabs and other forms of life we associate with the warm, fertile Gulf waters. Some seventy percent of the fish and shellfish spend at least part of their lives in the coastal marshes, and these creatures constitute middle links in the food chain which ultimately feeds even those species which live and reproduce in the open Gulf.

The coastal marshes should not be confused with the popular image of Louisiana's swamps. The marshes are flat, open terrain laced with numerous bayous and drainages of varied sizes. The low islands of muck and mire are covered with saltwater-tolerant grasses.

In fact, much of the surface area is treacherously deceiving. It is "floton," or floating marsh: a thin, watery mud layer held together by the root systems of marsh plants. More than one marsh traveler has "floated his hat" following a misstep on this goo.

A sometimes startling feature of the coastal marshes is the occasional cheniere. Each is a remnant of Louisiana's pre-history, marking a point where ancient seas once pounded the Louisiana coast. Rising above the surrounding marsh and encompassing anywhere from a few acres to several square miles, chenieres frequently support stands of robust hardwoods. Despite their precarious exposure to storms, the chenieres were home to early Louisiana Indians, to pirates and to many of the early Acadians.

Much of the coastal marsh area is largely unpopulated. Some chenieres support small settlements and villages and on the northern edges of the marsh urban areas such as Morgan City, Houma and even New Orleans rise from the mud just where the coastal marsh gives way to higher ground.

On the western side of the state, the coastal marsh area makes a gradual transition into the Louisiana Prairie region. This historically flat, open and fertile expanse has been converted to intensive agriculture and is most famous for the production of rice.

For the outdoorsman, the coastal marshes present unlimited opportunity. Fishing, both in the marshes proper and in the adjoining Gulf waters, is nothing short of fantastic.

The naturalist and the outdoor photographer or artist will be hard pressed to focus his or her attention in this cornucopia of birds, animals and natural beauty.

The hunter will find waterfowl of almost every species during the winter months and, for the adventurous and hardy, the marshes support a healthy population of McIlhenny whitetails, a subspecies of deer with small bodies and outrageously large hooves.

The hunter will find waterfowl of almost every species during the winter months.

In the southwestern prairie region, stocking efforts have produced stable populations of white-tailed deer and wild turkeys, while the flourishing rice industry attracts ducks and geese in uncountable masses.

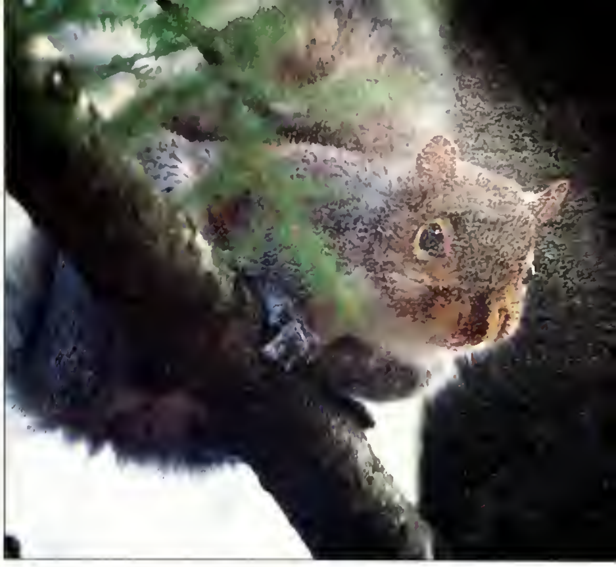
The west-central and northwestern quadrant of the state (for our purposes, the area north of DeRidder and Alexandria and west of the Ouachita River) presents an altogether different picture.

A land of rolling, sandy hills covered with pine and mixed pine-hardwood forests, this is an area of small towns and villages...a bastion of a rapidly disappearing rural America.

Lumber is the king here, and much of the land is owned by large timber companies. The sprawling pine plantations are interspersed, however, with numerous farms and cattle ranches.

Contrary to popular belief, early explorers did not find Louisiana to be uniformly populated with an abundance of deer, bear, bison, panthers, wolves and turkeys. The west-central and northwestern areas are noted in historical accounts to have held insignificant game.

Due to the stocking and management efforts of the Department of Wildlife and Fisheries and its predecessors, good populations of deer, turkeys and small game are now found throughout the area.



Photograph by Jeff Watson

A multitude of rivers, bayous and lakes, both natural and manmade, provide outstanding fishing opportunity for such varied species as landlocked striped bass, catfish, black bass and crappie.

The third distinctive region of the Bayou State is usually identified as two separate areas. In reality, it is a single broad swath of hardwood bottomland running from the extreme northeastern corner of the state to the beginnings of the coastal marsh near Morgan City.

This lush, fascinating area comprises the legendary Tensas Forest on the northern end and the renowned Atchafalaya Basin, which begins at the confluence of the Mississippi and Atchafalaya rivers near Simmesport.

Totaling more than a million and a half acres, the area is a fragment...a mere remnant of a massive and almost unimaginable twenty million acre hardwood bottomland forest that once swept through the heart of the continent from Illinois to the Gulf.

This is the area of Louisiana which has historically held the preponderance of game, including panthers, bear, deer and turkeys.

In the Tensas Forest, vast stands of second-growth hardwoods totaling nearly a million acres dominate incredibly fertile lowlands and swamps. Nearing maturity, these forests now hint at the natural splendor which surrounded the Indians and the early explorers before loggers decimated the great forests and plows tore the land for crops.

More than 400 separate species of birds have been identified in the Tensas, and the last confirmed sighting of the ivory-billed woodpecker is credited to the region. Black bears still roam the forests and, until just a few decades ago, Florida panthers and wolves

Photograph by Steve Maslowski

were common residents.

Numerous waterways and oxbow lakes, created when the Mississippi River changed its course, provide excellent fishing and hold thick flocks of waterfowl during the winter.

The white-tailed deer population has been estimated at one deer for each ten acres in parts of this area!

In addition, the wild turkey is abundant throughout the region.

To the south, the sprawling Atchafalaya Basin covers a half-million acres of mixed hardwood forest and cypress-tupelo swamps.

This is the setting for the popular "Bayou Country" image. Towering cypress trees, festooned with Spanish moss, jut skyward from dark, glassy swamp waters and mucky palmetto flats amid a stunning array of wild flora and fauna. Waterfowl, shore birds and upland birds mingle freely.

Eagles soar high above raccoons, beaver, deer and the occasional black bear, while a variety of snakes cut the surface of the water and alligators and snapping turtles churn the mud below.

Hunting here is unexcelled, fishing is fantastic for black bass, bream and catfish and the naturalist, artist and photographer will discover Nirvana.

It can, however, be a dangerous place. Dark, tangled and, to the casual observer, devoid of landmarks, those unfamiliar with the swamps can quickly get lost.

The remaining portion of the state comprises the Florida Parishes, the eight parishes north of Lake Pontchartrain and east of the Mississippi River which were once a part of Spanish Florida and were not included in the original Louisiana Purchase.

This is the land of John James Audubon. It ranges from the beautiful Tunica Hills on the east to the verdant Pearl River Swamp (historically, the Honey Island Swamp) in the west. In between, one finds rolling hills cloaked in pine-hardwood and mixed hardwood timber and dotted with old plantation homes, rural farms and small, picturesque communities.

The southern portion of the Florida Parishes is the expansive Blind River-Manchac Swamp which closely resembles the interior of the Atchafalaya Basin.

Literally teeming with game, the Florida Parishes hold the state's highest concentration of wild turkeys and some of Louisiana's largest and heaviest antlered deer.

So, you see, there is a magnificent diversity of opportunity awaiting the outdoorsman in Louisiana that is matched by very few states. I have not even scratched the surface in this article.

There are still places in this hurly-burly world we have created where you can seemingly stop the clock and step back into the used-to-be. I, for one, fervently hope we never lose those places. ☐

To Bea, With Love

BY STEVE GERMAN

I lost my best friend today. The call came at 4:30 this afternoon. "We did all we could, but she's gone." Funny, but I knew as the phone rang Bea was dead. My hunting companion of the past 11 years had gone to the big duck marsh in the sky.

Labs - what a breed of dog! Bea was a black lab, the runt of the litter. I always pick the runt. They have to fight harder from the beginning and it seems to make them better dogs. Bea was no exception. Barely 50 pounds, she made up for her lack of size with 100 pounds of hustle and 200 percent of enthusiasm.

"My girl is gone!" She wasn't your ordinary dog. This was a dog that adopted my son. Even though she was a grown dog when Josh was born, he became her baby. All you had to do was ask "Where's Josh?" and Bea would look everywhere until he was found. God forbid someone try to get rough with her baby. Josh had it made as long as Bea was around.

How can I even begin to say what a dog of 11 years can mean to a person? Bea had an understanding of the English language that even surprised me at times.

She had sat on the dog stand beside me for so long that she had begun to think like me. I'm sure that she could tell most of my jokes better than I could. Most people believe that dogs only understand the tone of voice or the way the command is given. Bea understood the English language. I'll always believe that.

Bea was a hunter. She was a dog that belonged to a duck guide. Bea had picked up more ducks in one year than a lot of dogs pick up in a lifetime. She hunted beside me everyday for 11 years. During our best season, she picked up 1,068 birds. Bea never balked; she did things I couldn't believe - things she was never taught. She was a natural.

Bea never really slowed down. She hunted until her old body caught up with her. In human years Bea was close to 80, but her eyes were still clear until the day she died.

Artwork by Don Edwards

It's hard for me to believe she's gone. No one who ever hunted with Bea will ever forget her. Her great spirit and enthusiasm made her a great dog. Bea was my best friend. It's a shame dogs have such short life spans. How many friends would do what "my ol' girl" would do for just a kind word and a pat on the head?

No one who hasn't owned a working dog can understand what a loss it is when they're gone.

As I said earlier...I lost my best friend today. I miss her. □

Photo courtesy LSU Sea Grant

Louisiana's window on the oceans of this planet is the Gulf of Mexico, and all along that highly vulnerable coastline, the cleanup forces are active.

Let's Stop Trashing Our Ocean!

BY BOB SHELDON

It's time we stopped trashing our life-giving ocean waters with the wastes of our prepackaged, industrialized society.

It's time, if not past time. Of course, you already know that. You've been hearing it for years, and in recent months you've waxed indignant over news accounts of wandering garbage scows and hypodermic needles washed ashore on public beaches.

What you may not know is that many of your fellow citizens have been working quietly to tidy up the litter left behind by your last shore party--and that stringent penalties have been enacted to cope with those who won't cooperate.

Louisiana's window on the oceans of this planet is the Gulf of Mexico, and all along that highly vulnerable coastline, the cleanup forces are active. Their targets are fishermen and mariners, both recreational and commercial; offshore oil rigs and onshore industrial installations; householders and campers.

One aspect of the campaign is international in scope.

For thousands of years, seamen gave no thought to dumping any and all trash and garbage overboard. As of last Dec. 31, a Maritime Pollution pact known as MARPOL largely outlaws that practice.

Dumping of plastic trash within 200 miles of shore is specifically prohibited. Plastic items such as six-pack rings, bags and nets have killed birds, fish and mammals that have tried to eat them or become entangled in them.

One provision of the MARPOL agreement bars the dumping of paper and glass within 12 miles of the Gulf of Mexico coast, as well as dumping of any floating debris within 25 miles of shore.

MARPOL has teeth. In aggravated cases, federal officials expect to demand sentences for violators of up to $50,000 in fines and five years in prison.

Not only major cargo carriers but small-scale fishermen and boaters will have to learn to keep their discarded equipment and other trash on board until they pull into shore and can dispose of it properly.

They'll be doing themselves a favor. Many boaters have found their craft disabled after plastic lines and other objects fouled their propellers or clogged water intakes.

Louisiana's oil industry, for one, has taken the cleanup to heart.

Workers on thousands of oil platforms used to toss everything from hard hats to steel drums into the Gulf. But the U.S. Minerals Management Service now says that trash from this source has been reduced significantly. As elsewhere, plastic and foam drinking cups on crew dinner tables are being replaced by paper cups, which create nowhere near the problem.

There have always been those dedicated souls who patrolled the beaches of Louisiana alone or in groups to police up after the bad manners of others. It was not until 1987 that the first concerted, statewide beach cleanup was conducted.

The effort was organized by the Louisiana Sea Grant College Program and its assistant director, Michael Liffmann. The program is based at Louisiana State University in Baton Rouge.

Under the leadership of Margie Vicknair of New Orleans and Calvin Fair of Baton Rouge, some 3,300 volunteers on 17 beaches stuffed 16,000 trash bags with every conceivable variety of litter.

The beach cleanup was staged again in 1988. It is, in fact, becoming an annual fixture, with repeats scheduled for around the last Saturday of September during the three-week-long national observance of Coastweeks.

Meantime, the Louisiana Litter Control and Recycling Commission is calling attention to Act 936 of the 1987 Legislature which mandates the placement of trash receptacles in all parking areas serving the public. The owner or operator of the parking area is responsible for providing and maintaining the receptacles.

Louisiana's anti-litter statute has been hammered into one of the toughest in the nation. Littering from a boat or motor vehicle can cost the operator of the conveyance a fine of $100 to $750.

A second offense can bring a fine of $300 to $1,500 and a suspension of the operator's license for 30 days. A third offense? A fine of $500 to $3,000, suspension of driver's license for one year, up to six months in jail--or all three penalties combined!

Overall, the problem of trash in coastal Louisiana parishes is far more urgent than most inland residents imagine. The reason is that the marshy, waterway-laced terrain leaves little room for usable dump or landfill sites.

Police juries are overwhelmed by the dilemma of finding some place outside their parish that will accept the stuff and then coming up with the cash to haul it away.

What's more, whenever a thoughtless householder, camper or businessman adds his bit to the mounds of rubbish already polluting the landscape, chances are it will enter the bayou or river system, get carried out to sea and finally drift back to shore.

Nevertheless, progress certainly is being made, and conservationists are hopeful that a solution will emerge if only enough good citizens heed the appeal:

Let's stop trashing our ocean!

Balloons a Threat To Marine Life

To many creatures, items made from plastic look good enough to eat. They can, however, be deadly.

Birds fill their stomachs on floating bits of plastic. A plastic bag may look just like a jellyfish to a sea turtle. But it can't be digested or excreted.

Elizabeth Coleman of the Louisiana Sea Grant College Program notes that every year the nation's science teachers send up nearly 500,000 helium-filled balloons as part of their classroom projects.

More balloons are released at football games, Olympic events, Mardi Gras celebrations and other gala affairs.

Prevailing winds carry many of these balloons out to sea. Eventually they come down. Sad to say, porpoises and other ocean dwellers are dangerously attracted to them. □

There have always been those dedicated souls who patrolled the beaches of Louisiana alone or in groups to police up after the bad manners of others. It was not until 1987 that the first concerted, statewide beach cleanup was conducted.

Photo courtesy LSU Sea Grant

LOUISIANA DUCK STAMP

A Boost to Waterfowl Protection

Louisiana's wetlands are recognized as perhaps the most important habitat in the nation for wintering waterfowl. The time for a duck stamp program to provide consistent funding for wetlands has arrived.

BY SARA ANN HARRIS

Photography by Bob Dennie

Louisiana now has a duck stamp program. The Waterfowl Conservation Stamp and Print Program was made official on November 16 when David Noll beat out 44 other Louisiana artists in a contest to select art for the first duck stamp and print.

Louisiana's wetlands are recognized as perhaps the most important habitat in the nation for wintering waterfowl. The time for a duck stamp program to provide consistent funding for wetlands has arrived. And it couldn't have come at a better time. As LDWF duck stamp coordinator Dave Morrison explained, "The time is right because money raised from the program will provide a funding source for the acquisition of wetlands when it is most needed. Duck numbers are down and any acquisition or enhancement of wetlands will be beneficial to waterfowl. It also gives us a mechanism to potentially raise additional monies to support North American Waterfowl Management Plan activities in Louisiana."

Department secretary Virginia Van Sickle explained at the awards presentation that the state expects to receive, as its share of the profit, one million dollars annually from the sale of stamps and prints. In addition, the department has established a donation program with the funds being deposited in the special legislatively-mandated duck stamp fund. In announcing the donation program, Van Sickle explained that no contribution was too small and pledged that all donations received would go exclusively to wetland acquisition and enhancement. The key factor, she said, in the department's support of the program was the stipulation that "these monies be used strictly for the waterfowl program."

Projections by duck stamp publishers (who came to Louisiana to judge the contest) on the success of this program were positive. Bubba Wood, judge and Texas duck stamp publisher, commented, "There's no question this (Louisiana's first duck stamp) will be a tremendous success." He said the stamp has long been eagerly anticipated by stamp and art collectors and dealers throughout the country.

Print sales are highest, by far, in the first year. First of State sales usually run between 16,000 and 17,000. "Louisiana could do 20,000 -- the largest sale ever," Wood said. His explanation: "Louisiana has a tremendous tradition of waterfowling."

But "the single biggest reason," he added, "for Louisiana being the best seller ever is the enthusiasm of the LDWF staff --from Virginia Van Sickle on down. They have a better understanding of the program than any state I've worked with."

LDWF's Dave Morrison, Larry Soileau, and Robert Helm organized the program. On the day of the judging at LDWF headquarters, employees, artists and their families crowded into the exhibit hall. The buzzing quieted only as the judges sat to make their final decision. From fourteen semifinalists they were to pick a first, a second and a third place. Each entry was placed on an easel before them. The judges assigned it a number: one, two or three -- one being the best score. Each held up a card numbered on both sides. The cards were visible to an attentive audience and to the persons whose task it was to tally up the scores.

Department secretary Virginia Van Sickle announced the winners: a painting of a pair of teal on the water by Murrell Butler of St. Francisville placed third; a low-flying pair of bluewings by Patrick Soper of Lafayette was runner-up; and David Noll of New Orleans won first place with an oil painting of teal in a typical Louisiana setting.

The four judges were from out-of-state and traveled to Louisiana at their own expense: Jim Knuckey of Voyager Art of Minnesota; Bubba Wood, Collector's Covey, Dallas; Larry Grisham, Grisham's Art, Jonesboro, Ark., and Burnett Harshman, Midwest Marketing, Sullivan, Ill. Collectively, they have published 90% of the state duck stamp prints.

They explained that, in addition to craftsmanship and attention to realistic detail, what distinguished the winning art from the rest were the cypress trees in the background. It was undeniably a Louisiana rendering.

The waterfowl stamp will be issued by LDWF for $5 to residents and $7.50 to non-residents. Beginning next duck season, its purchase will be mandatory for all duck hunters in the state.

The prints will be available by late summer of 1989: Regular Edition at $135, Medallion Edition at $300, and Executive Edition at $450. Each print will require the purchase of two stamps (at a total of $12.50).

Donations to the special duck stamp fund can be made at any time by simply sending a check made payable to the Louisiana Department of Wildlife and Fisheries Duck Stamp Fund (LDWF Duck Stamp Fund), P.O. Box 98000, Baton Rouge, LA 70898-9000, Attn: Dave Morrison, Duck Stamp Program Coordinator.

Look for information on ordering your print in the summer issues of Louisiana Conservationist.

About the Artist

A native of New Orleans, David Noll, 35, began his career as a wildlife artist in 1971 painting studies of waterfowl as a self-taught watercolorist. He later received training in oil painting at the New Orleans Academy of Fine Arts, where he is now an instructor.

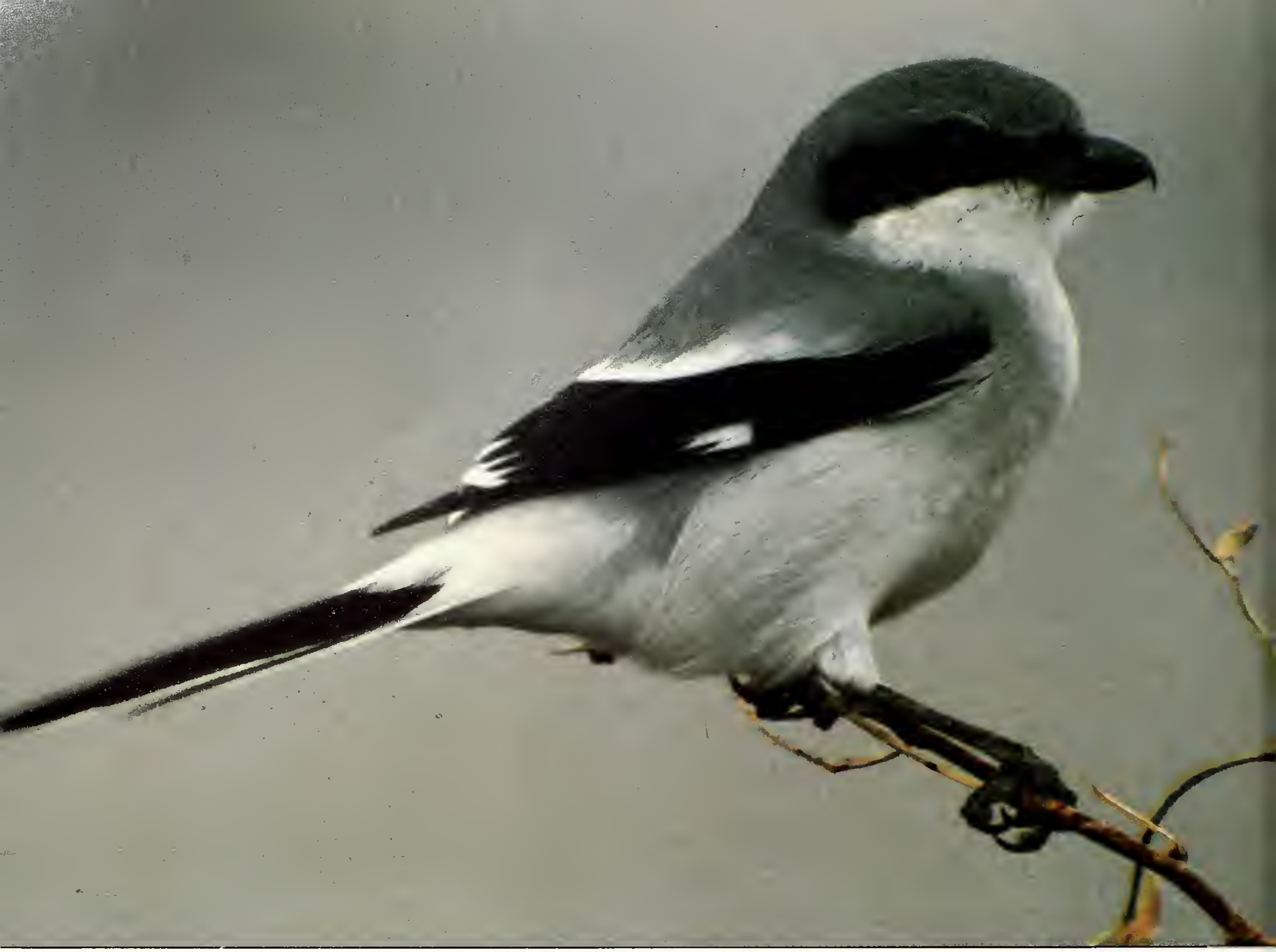
At present, Noll concentrates mainly on painting the marshes and bayous of Louisiana. Major exhibits have included the Waterfowl Festival, Easton, Md., 1976; the Leigh Yawkey Woodson Birds in Art exhibit, Wausau, Wis., 1984; and two one-man shows at the Academy Gallery, New Orleans, 1984 and 1986.

He was one of the nationally featured artists of Ducks Unlimited in 1981 and had two prints published at that time.

Noll has been a sportsman since boyhood. Originally, it was his stepfather who introduced him to the marsh. His enjoyment of fishing is topped only by that of painting. He is a supporter of Ducks Unlimited, the Nature Conservancy and the Gulf Coast Conservation Association.

When asked about the winning painting, Noll explained that he started painting birds when he was nineteen years old. Looking for a medium that would best illustrate the fine details of bird feathering, he chose "board" over canvas when he painted the awarded "Blue Wing Teal." ☐

Top photo is of David Noll, winning artist. In bottom photo, judges assign each entry a number: one, two or three - one being the best score.



Photograph by Steven Holt/VIREO

Shrikes exhibit a curious tendency to impale their prey on thorns, barbed-wire fences, or other suitable projections.

LOGGERHEAD SHRIKES

The Butcherbirds of Louisiana

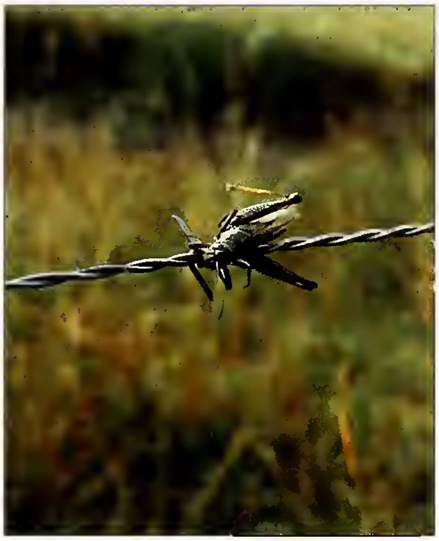
BY LOYD MITCHELL

The loggerhead shrike (Lanius ludovicianus) is certainly one of Louisiana's most interesting and unique songbirds. A bird of open country with scattered trees and shrubs, the loggerhead shrike can be seen year-round perched conspicuously on fences, poles, telephone wires, and other open sites. It is especially abundant along hedgerow-bordered farm roads in the agricultural areas of southwestern Louisiana. At first glance, a loggerhead shrike may be confused with a northern mockingbird. Both have gray backs, whitish breasts, and white wing patches and tail markings. However, the loggerhead shrike can be readily distinguished by its relatively large head (hence the name "loggerhead"), stout, sharply hooked bill, and the black facial mask extending through and behind the eye.

Shrikes are unique among songbirds in that they regularly prey upon vertebrate animals such as snakes, mice, small songbirds, and frogs. Furthermore, shrikes exhibit a curious tendency to impale their prey on thorns, barbed-wire fences, or other suitable projections. This behavior has earned the loggerhead shrike the name of "butcherbird." Its genus name, Lanius, is Latin for "butcher." while the specific epithet ludovicianus means "of Louisiana," referring to the geographic area from which the species was first described.

There are 74 species of shrikes worldwide, but only two, the loggerhead shrike and northern shrike (Lanius excubitor), occur in North America. Of these two, we in Louisiana see only the loggerhead shrike, which breeds across southern Canada south throughout the United States and into Mexico. Loggerhead shrikes are year-round residents in Louisiana; however, recent studies by researchers at the LSU Museum of Natural Science suggest that Louisiana receives winter migrants from more northerly latitudes which augment our own resident shrike populations.

Shrikes are territorial year-round, with each defending its own hunting territory during the non-breeding season. With the onset of breeding, shrikes pair up and both members defend the nesting territory. Loggerhead shrikes begin their nesting activities early in the year. In Louisiana, most shrikes have begun nesting by mid-March or perhaps earlier. In our southerly climes, shrikes commonly raise two broods per season and will normally renest after a nesting failure. The tendency to renest is particularly advantageous to early nesters such as the loggerhead shrike, as early spring storms can lead to the failure of many first nests through nest-blowdown or chilling of the young.



Loggerhead shrikes tend to nest in the same general location from year to year, placing their nests from three to 15 feet high or higher in a variety of shrubby trees, thick bushes, or vines. Fencelines and hedgerows in association with pastures, lawns, or crop fields are preferred nesting sites, but isolated trees and shrubs are also used. The nest is a rather bulky structure of coarse twigs and weed stems, often placed well out on a limb in the concealment of dense twigs and foliage. Both sexes of the pair participate in building the nest, which takes from 10 to 12 days to complete.

As is the case with many other bird species, clutch size in loggerhead shrikes increases with increasing latitude. Shrikes in Louisiana generally lay clutches of four to five eggs, while shrikes in the more northern states lay as many as seven to eight eggs per clutch. Loggerhead shrikes are "penultimate" incubators; that is, incubation begins before the final egg is laid. This results in eggs in the clutch hatching on different days with usually two days age difference between the youngest and oldest nestling. Penultimate incubation in shrikes may be an adaptation to insure some nestling survival in spite of spring storms, as older nestlings are better able to survive adverse weather conditions than are younger chicks. Most of the hunting during the nesting cycle is performed by the male, who supplies most of the food to the female during the 16 to 17 day incubation period, and to both the female and nestlings after hatching. Should nestlings die, the adults may remove them from the nest cup, or may eat them themselves or feed them to the surviving young.

Young shrikes fledge (leave the nest) 19 to 20 days after hatching, and generally remain in the nest tree for two to three days. The young remain dependent on the adults for food up to three or four weeks after fledging. During this time, the female contributes little if any to feeding the young, leaving this task entirely up to the male.

Perhaps the most interesting and unique aspects of the loggerhead shrike involve its food and feeding habits. Shrikes are the only truly predatory songbirds in the sense that they regularly prey on vertebrate animals such as mice, small songbirds, snakes, and frogs, as well as their more normal fare of grasshoppers, crickets, beetles, and other insects. In fact, a shrike will take just about any animal it is capable of subduing. Diets can vary seasonally depending on the availability of different prey. In general, insects make up the bulk of the diet. Vertebrates in-

Each year, more and more nesting habitat is lost as hedgerows and fencelines are cleared to convert pasture to rowcrops and in order to squeeze an extra bushel of rice or soybeans from the land.

crease in importance through the fall and winter months.

Loggerhead shrikes are well adapted for their unique role as predatory songbirds as evidenced by several structural and behavioral traits. Shrikes possess very acute eyesight and are able to detect prey as small as a mouse at distances of 100 yards and individuals of its own species at 1,000 yards. This visual acuity lends to the effectiveness of the shrike's "sit and wait" method of hunting in which the bird occupies an elevated perch affording a clear view of the surrounding habitat and any prey that may reveal itself. Shrikes seemed to have benefited in this respect by man's placement of telephone and power lines along roads throughout rural areas, as the poles and wires make excellent perches .

Photograph by A. Chuickshank/ VIREO

The shrike's stout, sharply-hooked bill is reminiscent of that of a hawk, and indeed aids the shrike in killing and tearing apart larger prey items. The ecological similarity of shrikes to birds of prey is further illustrated by the presence of a notch or "tomial tooth" on each edge of the shrike's upper bill near the tip. The only other North American birds to possess this specialized structure are the falcons, where the tomial tooth reaches its highest degree of development.

Unlike the "true" birds of prey (hawks, falcons, and owls), shrikes have relatively weak feet and lack the strong, sharp talons possessed by the former group. This leaves the shrike at somewhat of a disadvantage when handling larger prey items, particularly vertebrates.

However, an interesting behavioral trait has evolved in shrikes that compensates for their weak feet. Shrikes routinely impale larger prey items, such as large grasshoppers and most vertebrate prey, on thorns, barbed-wire fences, and the like, or wedge the prey in the fork of a limb. Most scientists now agree that the evolutionary basis of impaling behavior is to anchor large food items, thus allowing the shrike to handle larger prey while lacking talons.

Smaller prey items such as bumblebees and other flying insects are usually snapped up and eaten by the shrike in one motion. Larger prey, however, are killed either by crushing between the bill, in the case of grasshoppers, or in the case of vertebrates, by pecking and biting at the back of the head and neck, thus severing the spinal cord. Larger grasshoppers are usually held in one foot as the shrike tears off bits and pieces. Most vertebrate prey, however, are first impaled before they are consumed.

Another curious aspect of shrike behavior is the tendency of shrikes to leave their uneaten prey impaled for one day to several weeks, as if to store food for later use. In fact, an area with many such "stored" food items has often been referred to as a larder or a cache. To what degree the shrike purposely stores food for later use is a subject of debate. Although many impaled food items are never consumed, some studies have shown that the male may retrieve many such stored food items to feed the female and young during incubation and brooding.

Shrikes are high on the food chain and thus are very vuneralable to pesticide poisoning.

Louisiana is blessed with a relative abundance of loggerhead shrikes. However, data from a number of sources indicate sharp declines in loggerhead shrike numbers over most of the species' range, including the southeastern United States.

Unfortunately, Louisiana is no exception. The reasons behind the declines have yet to be determined exactly, but habitat loss and pesticide contamination are believed to be the two most likely causes. Being predators, loggerhead shrikes are high on the food chain and thus are particularly vulnerable to pesticide poisoning through consumption of contaminated prey.

And, with modern agriculture seemingly becoming more dependent on chemicals to promote larger and larger crop yields, the effect of pesticide contamination on shrikes (and indeed wildlife in general) is an area in need of much attention.

As important as the pesticide issue may be, however, general habitat loss may be the deciding factor in determining the future of the loggerhead shrike in Louisiana and the rest of its range. Habitat loss manifests itself in loss of breeding habitat or foraging habitat, or both. Each year, more and more nesting habitat is lost as hedgerows and fencelines are cleared to convert pasture to rowcrops and in order to squeeze an extra bushel of rice or soybeans from the land.

Because prey are generally much more abundant in grassland than in rowcrop fields, conversion of pasture to rowcrops also degrades shrike foraging habitat. However, intensive agriculture is not the only culprit in loggerhead shrike habitat loss. Shrike habitat is also lost when pastures and other open areas are reforested, becoming too thick for foraging.

The net effect of these land-use changes and implementation of "clean farming" practices is a loss of habitat for the loggerhead shrike, not to mention other forms of wildlife inhabiting our agricultural areas. Ironically, the concentration of shrikes along roadsides in the intensively farmed regions of the state may be an indication of overall habitat degradation as, sadly, these areas often represent the only foraging habitat available.

Loggerhead shrikes are still relatively abundant in many areas of Louisiana. However, this by no means implies that we can turn our backs on this unique, interesting, and beneficial songbird. Action must be taken now if we are to avoid placing the loggerhead shrike in serious jeopardy.

As with many such issues, effective conservation and management of loggerhead shrikes in Louisiana will demand effort and understanding from all parties involved. One of the first actions that needs to be taken is to obtain a more accurate picture of what factors affect shrike populations and how they effect them.

Once these determinations are made, we can all work together to insure the future abundance of the loggerhead shrike in Louisiana. □

Photograph by Steven Holt/VIREO

BITING THE BULLET

BY BETTSIE BAKER

We simply could not afford to continue attempting to run a $40 million operation on $32 million.

The Department of Wildlife and Fisheries is funded through an assortment of fees, royalty payments, and federal funds. Though the department is currently totally self-funded, these funding sources are quite complex, and are often dependent on events and circumstances that are outside of the department's control. Also, several of these major revenue sources are usable only for specific purposes, dramatically restricting the department's flexibility in using them.

In addition to the complexities of the sources of revenue to the department, the ability to spend these funds is limited by the expenditures outlined in the budget. Thus, understanding both the budget process and Wildlife and Fisheries' sources of funding are necessary to understand the department's complete financial picture.

The Wildlife and Fisheries budget is split first into three operating units, the Office of the Secretary, Office of Wildlife, and Office of Fisheries. Budget allocations, once set and appropriated by the legislature, cannot be transferred between offices. Thus if the Office of Secretary had "surplus" salary dollars, these could not be transferred to the Office of Wildlife and vice versa. This prohibition affects not only expenditure categories, but also determines the flow of source funds to divisions. Once revenues or means of financing have been set and allocated to offices and divisions they typically cannot be altered without an act of concurrence on the part of the Legislative Budget Committee.

Once the department's total budget has been broken out to Office, it is further subdivided into divisions. Based on its allocation of funds, each division sets priorities and establishes programs.

In 1983-84 the department had $47.3 million dollars to fund operations, by 1986-87 this had dwindled to only $32.3 million - a swing of $15 million. In 1987-88, with the full force of license increases in place, revenue had begun to increase slightly to $34.5 million.

In 1983-84, the department had $23.4 million in royalty income, approximately 50 percent of its total income, while license fees constituted $8 million, or 16.8 percent of total revenue. By 1987-88 these percentages had shifted dramatically with royalty income totaling $8.2 million, or 23.7 percent of the department's revenue, while license sales totaling $14.9 million, constituted 43.1 percent of revenue.

The shift in revenue source is caused by two factors. First the dramatic increase in oil and gas prices in the late 70's and early '80's boosted the department's income. Similarly, when the bottom fell out of world oil markets and prices fell, so did our revenue and our financial stability. Secondly, the significant increase in license revenue is a direct result of the increase in license fee rates that the department supported and brought before the legislature and passed.

Looking forward to 1989-90, the existing sources of revenue do not reveal much hope for broadening, and in fact the contribution to revenue made from shell dredging is at best questionable, and at worst non-existent.

However, the future does hold some promise for increased revenue to the department from civil penalties for wildlife values, potential revenue from better oversight of sand and fill material operators and increased severance taxes on all seafood among others. In addition, there is a possibility of general fund money coming to the department to assist in the continuation of specific programs and to provide for special needs. Thus, the long term picture is not terribly bleak, but each of these changes requires legislation.

We do not receive any support from the general fund.

In addition to a decline in total revenues, other factors have come to bear on our financial stability.

The first is the fact that we must fund operations from our own cash revenue sources. In spite of the fact that the department receives an appropriation from the Legislature, we do not receive any support from the general fund, rather the legislature allows us to spend our funds at the approved level. Thus, we are totally dependent upon receipts from royalties, rentals and license sales. Since these revenues come in unevenly across the year, we must spend somewhat in line with our cash inflow. This situation was exaggerated this fiscal year because we had to carry forward certain debts that had not been paid in the prior year, for instance the extra paycheck that way delayed by the governor, vehicle purchases, payback of land acquisition debt, etc.

We started the current fiscal year with an approved budget of $39.3 million, more than adequate to support a full staff of 854 approved personnel. However, we also started the fiscal year with a realistic revenue projection of only $33.5 million. After meeting our obligations carried over from last fiscal year, we were left with approximately $32.6 million in funds available for operating. We simply could not afford to continue attempting to run a $40 million operation on $32 million. In addition, legislative mandates, federal regulations and various deeds of donation have established restrictions on how many of our available monies can be spent. Federal dollars often cannot be interchanged with Conservation Fund dollars and vice versa.

All these facts had to be taken into account in formulating plans to deal with our financial situation.

Thus, in order to bring operations to a supportable level from a total revenue and cash flow perspective, we allocated monies from our Conservation Fund to each division based on the projected Conservation Fund inflow as a percent of the total budget request. This way the divisions shared cuts based on each's relative off-take of Conservation Fund dollars which were the funds in question.

This allocation was deemed to be the most fair way of allocating the shortfall, since many divisions boosted spending allowances through the use of federal funds and other means of financing, and should, therefore, not be penalized as a result of these other diversified funding sources.

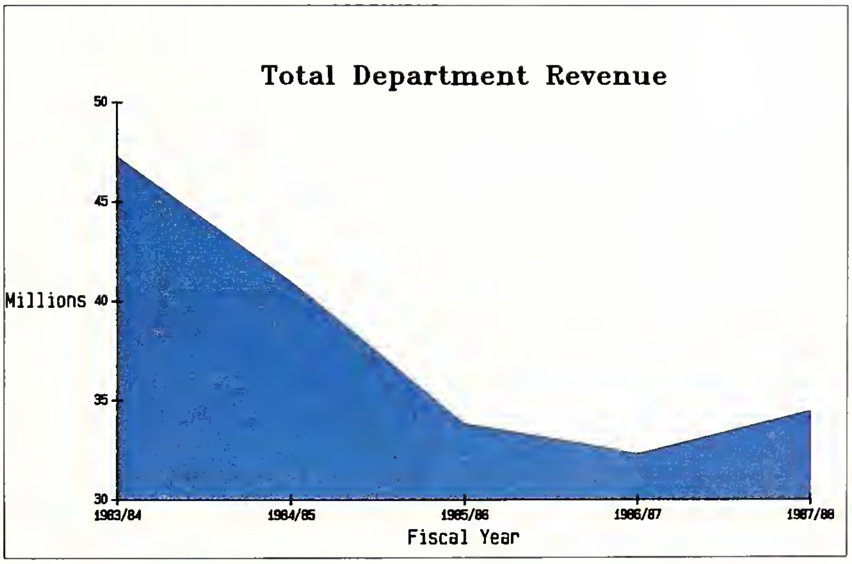
Based on the above allocation method, divisions estimated the required personnel and operating reductions to bring required expenditures into line with the given allocation.

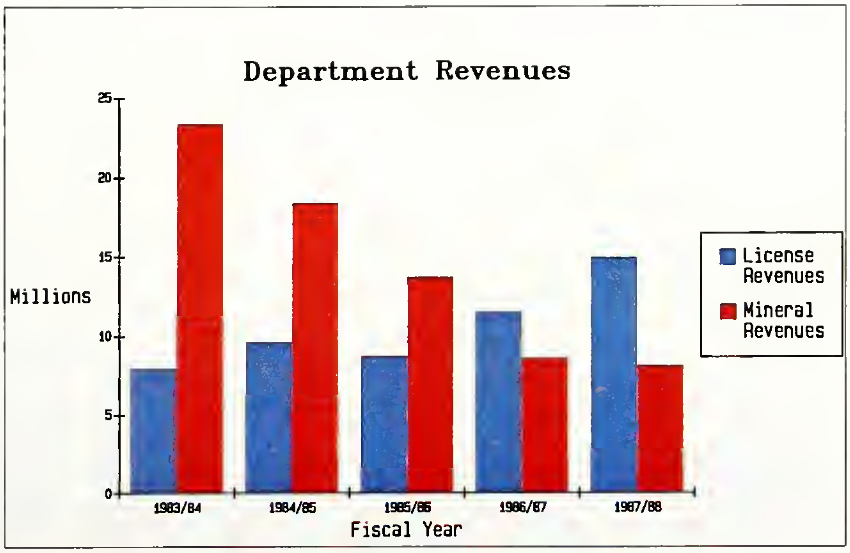
In addition to cash flow problems, the current administration (i.e. Governor and Division of Administration) established a mandatory reduction in manpower that was borne equally by all state agencies. This reduction was imposed through the budget process by reducing the dollars allocated to the salary category. This reduction in manpower was to be accomplished through an aggressive attrition program (i.e. retirements, not filling positions when individuals leave, etc.). In spite of meeting our aggressive attrition targets established in head counts, we were not able to meet the salary requirement (Budget) guidelines.

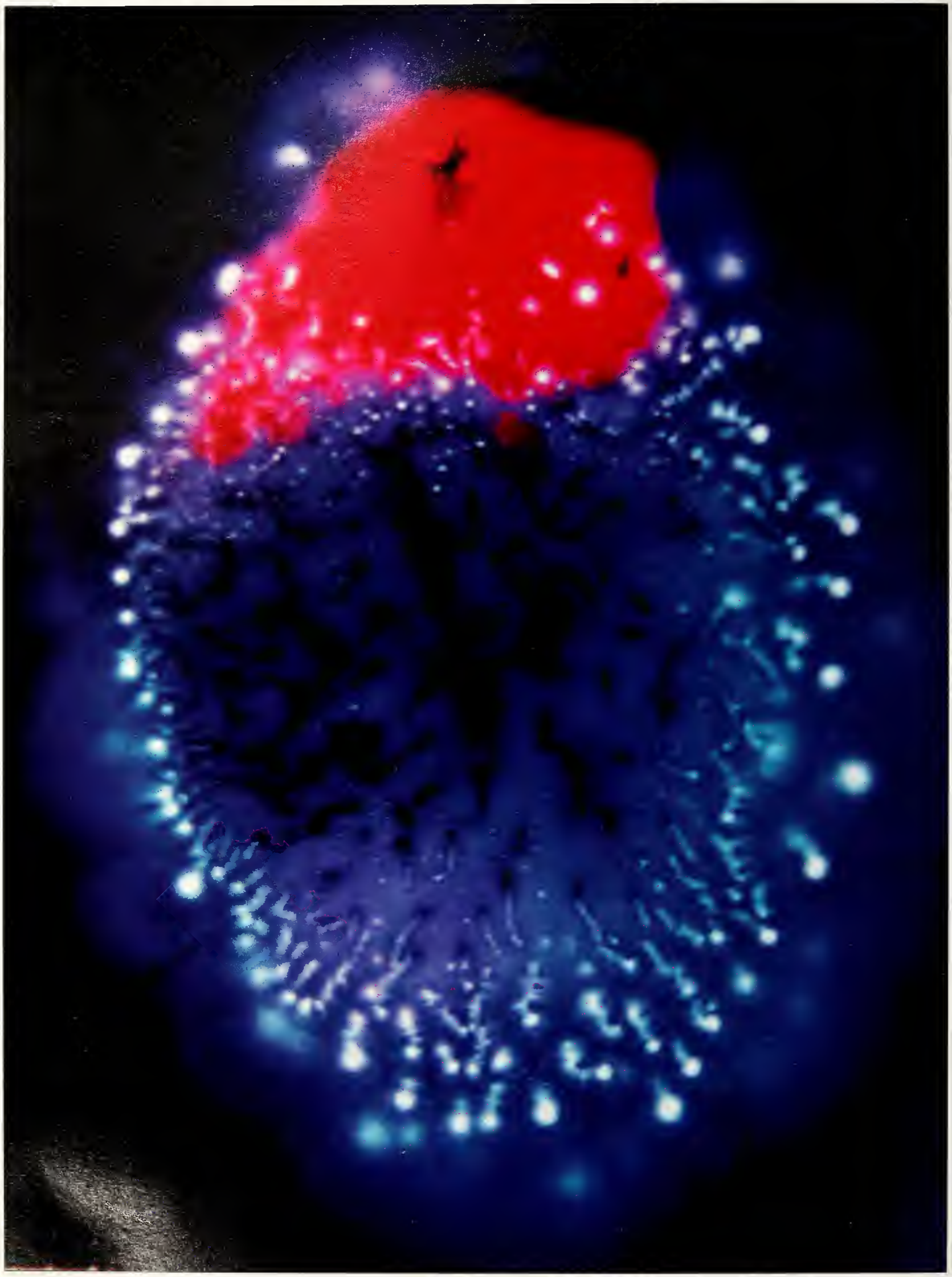
Considering this second factor, the recent department round of layoffs was, in some senses, inevitable due to both the cash flow problems and the shortfall in the budgeted category for salaries.

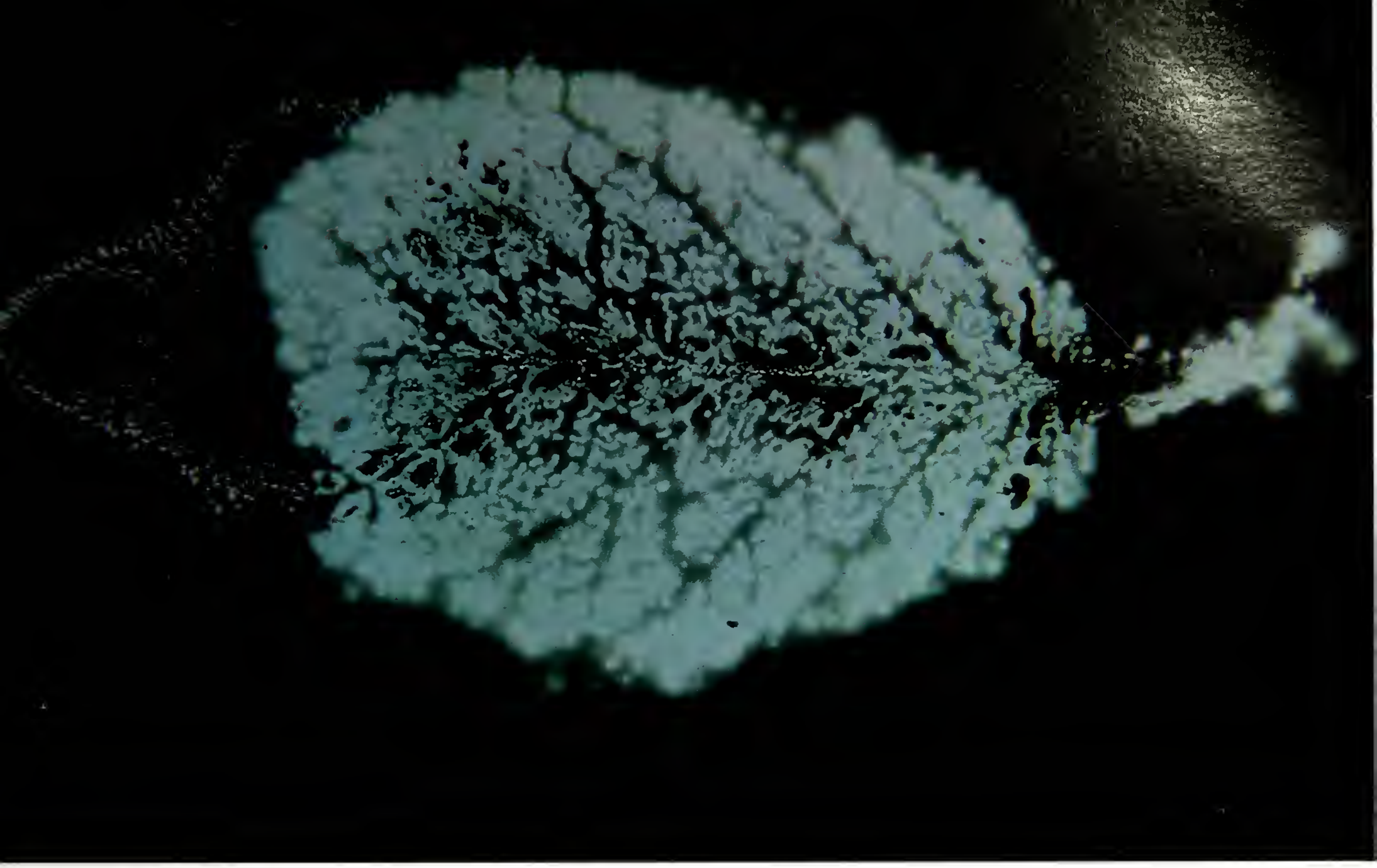
All told, the Department of Wildlife and Fisheries is faced with continuing serious financial uncertainty, which has made our current layoff action the necessary and prudent thing to do in order to manage our operations as efficiently and effectively as possible. ☐

As graphically indicated below, department revenues are down and licenses fees have surpassed mineral revenues.









A World We've Never Seen

In the Kirlian photograph above, the tip of the original leaf had been torn away, but when an electrical charge was applied to the remainder, the severed portion reappeared in ghost image. Kirlian photograph of leaf on the left shows phantom ghost image.

PHOTOGRAPHY BY ROBERTO DABDOUB

Roberto Dabdoub is an explorer, blazing a trail in regions that are too tiny to be seen by the naked eye.

By profession, the Honduran native is a cytogeneticist, or specialist in the study of chromosomes. At the Ochsner Foundation Hospital in suburban New Orleans, he seeks out clues to congenital defects by analyzing photographs of human chromosomes magnified 1,000 times.

By avocation, he utilizes his skills in photo microscopy to create startling works of art that have been widely acclaimed and published. Some of his pictures are enhanced by polarizing filters; many are not.

Consisting of greatly magnified views of common, everyday objects, they reveal abstract landscapes of extraordinary beauty that seem to derive from another universe.

Although still in his early 40s, Dabdoub is regarded as a pioneer in the strange world of Kirlian photography. Examples of his discoveries are maintained at the Smithsonian Institution in Washington, D.C. and the New Orleans Museum of Art.

Another name for Kirlian photography is electrophotography. Dabdoub produces an image on film by passing high-voltage electricity through some object.

If that object is alive or once was alive, say a leaf, Kirlian pictures disclose a ghostly aura emanating from it. That aura is interpreted by many as some form of energy. But exactly what it means, no one can say. ☐

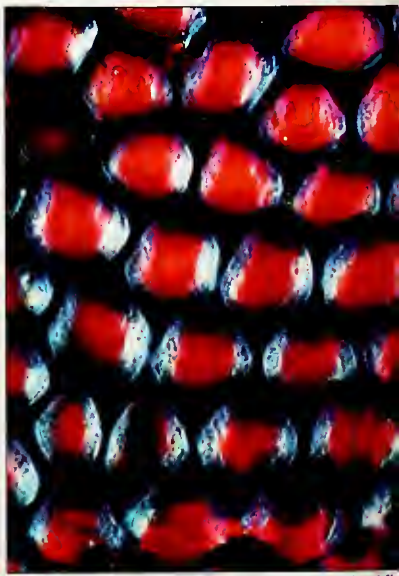
A World We've Never Seen

Sample of uric acid laden with impurities.

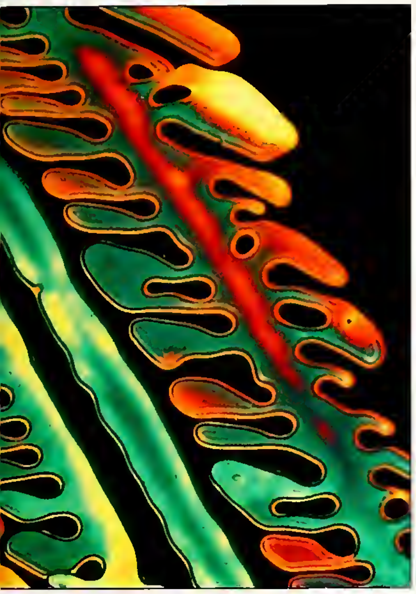
Interferon, a drug used to treat cancer.

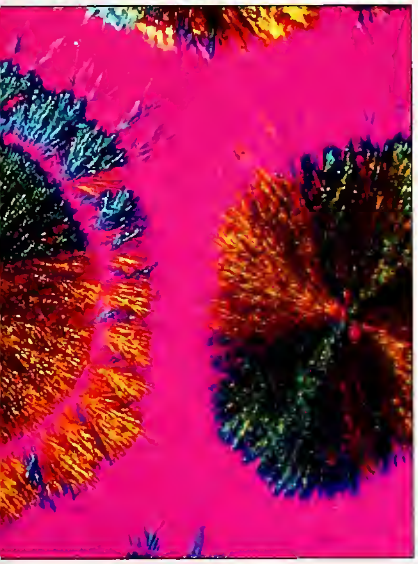
Cholesterol.

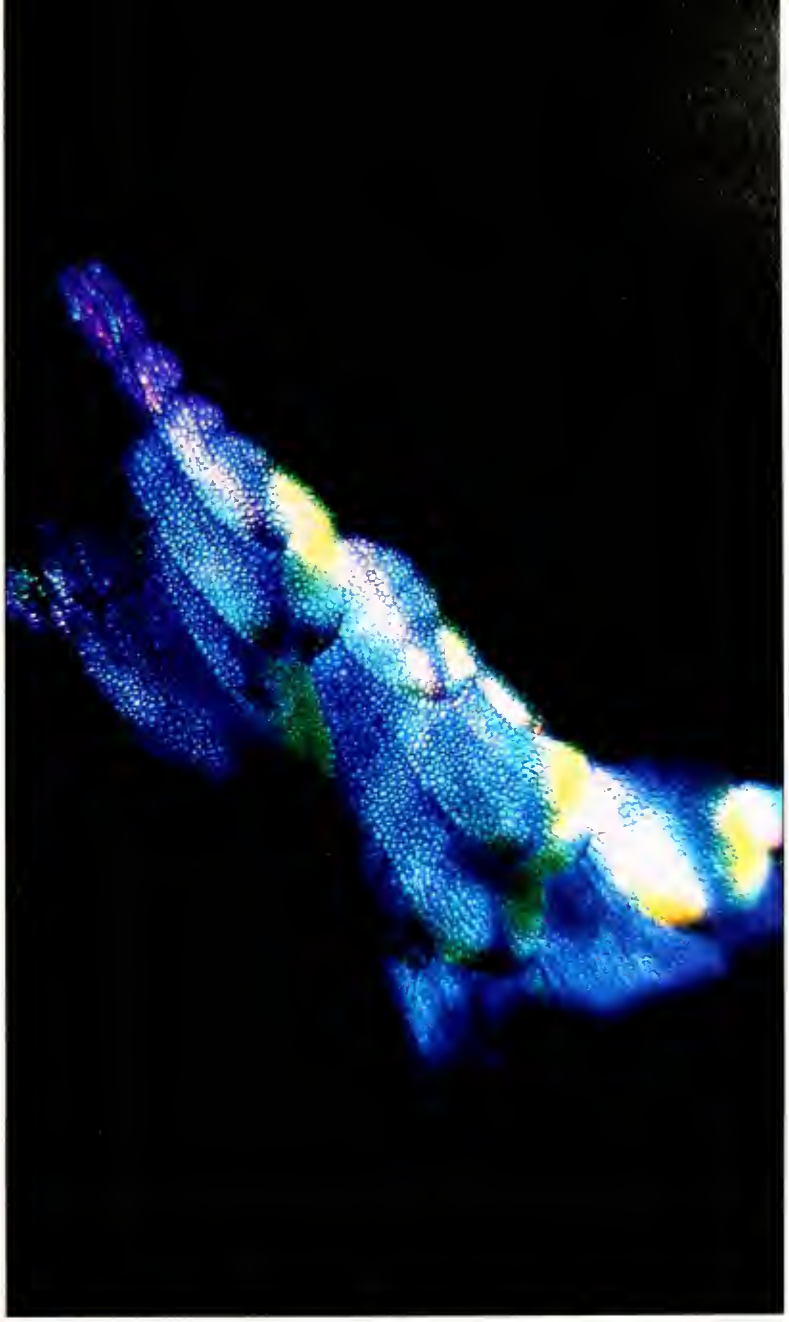
Decorative glaze (melted down) from a Mardis g



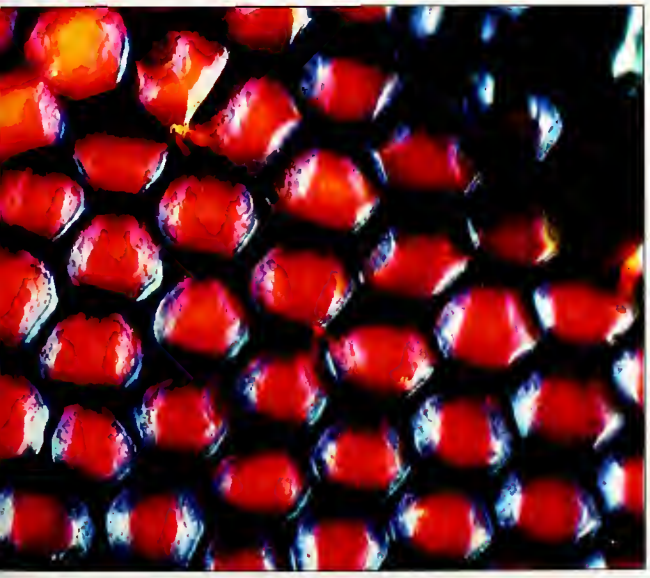
Detail on an insect wing found floating on the Mis



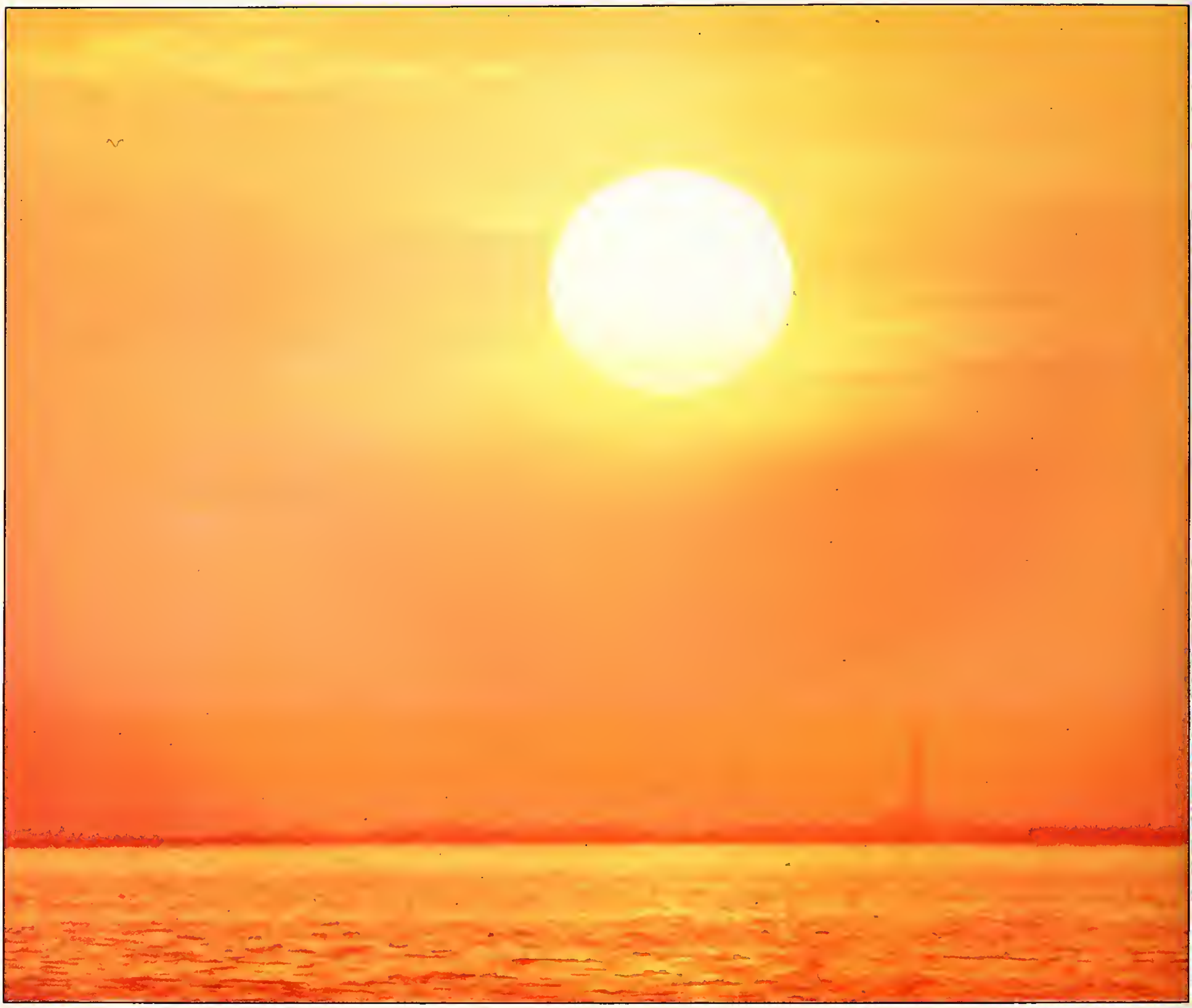




Live microscopic alga floating on the Mississippi River.



Fragile plant life filtered from Mississippi River water.



Photograph by Bob Dennie

John Firor is Director of the Advanced Study Program at the National Center for Atmospheric Research in Boulder, Colorado. This article is based on testimony given by Dr. Firor before the Senate Committee on Energy and Natural Resources (November 1987), the House Subcommittee on Energy and Power (July 1988), and the Senate Committee on Agriculture, Nutrition and Forestry (December 1988).

GLOBAL HEATING

The Greenhouse Effect

BY JOHN W. FIROR

This is a brief overview of a growing problem concerning the earth's climate, a problem which also deeply involves forests and wildlife. This problem is easily described: the earth's atmosphere contains certain gases that can absorb infrared radiation. For millions of years these gases have served to trap heat that would otherwise escape from the earth and thereby to keep the surface earth much warmer than it otherwise would be. But today, the concentrations of some of these gases are increasing, so that we must expect this heating of the climate to accelerate in years to come.

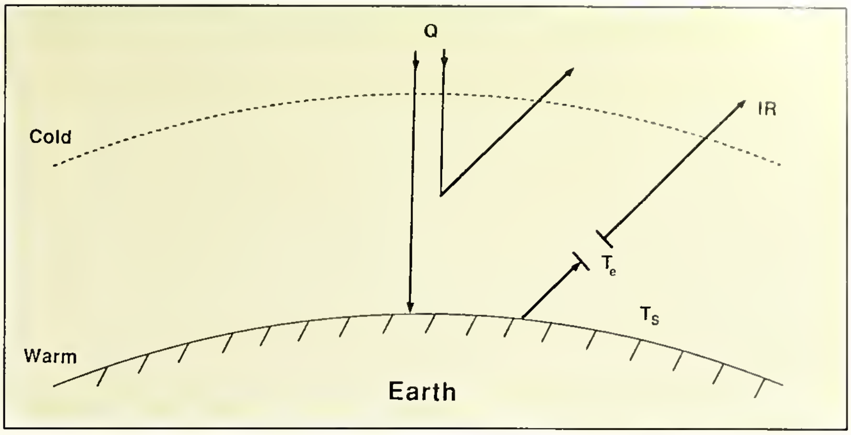
Human activities are the major cause of the increases in the amounts of these heat trapping gases in the air. The most important such gas is carbon dioxide, and the increase in that gas in the atmosphere is the result of the burning of fossil fuel and, to a lesser extent, the destruction of forests.

Second in importance is methane. Its sources are more varied than those of carbon dioxide and include swamps, municipal waste dumps, Coal mines, and leaking natural gas pipelines. But the largest sources are thought to be rice paddies and the intestines of cattle and termites, where organic material decays without being in contact with abundant oxygen.

Chlorofluorocarbons, the same chemicals that stand accused of depleting the ozone layer, also trap heat near the surface of the earth; nitrous oxide from fuel use and from fertilizers adds to the trapping, as do a long list of other substances.

Although the measurement techniques needed to measure the very small concentrations of these gases in the air have only been available for a few years or decades, trends in the concentrations for thousands of years in the past can be reconstructed. This ability arises from the fortunate circumstance that the ice that covers Greenland and Antarctica accumulates in annual layers that, in some locations, are undisturbed over long periods of time. Thus the deeper one digs into the ice, the farther back in time was the ice at the bottom of the hole laid down. The age of that ice can, today, be closely estimated by a variety of techniques.

When the snow falls each year on these polar ice caps, it brings down with it samples of all the particles in the air -- sea salt, volcanic dust, forest fire smoke, or whatever is there -- and it brings down some air too. Ice can now be brought up from many depths, representing many ages, and the small bubbles of the trapped air analyzed.



Sunlight, represented here by Q, enters the earth's atmosphere. Some is reflected back to space. The rest is absorbed in the air and at the surface and is the source of heat for the climate. In order to balance this heat which is absorbed each day, the earth must radiate to space the same amount. But the infrared radiation (IR), or heat, which leaves the surface cannot easily escape; most of it is absorbed in the air by gases such as carbon dioxide, methane, nitrous oxide, and water vapor. Only high in the atmosphere, where the temperature is much colder than at the surface, is the remaining air above thin enough to allow radiation to escape. The difference between T_s, the surface temperature, and T_e, the temperature higher up where the escaping radiation comes from, is large, about 60° F, and is the greenhouse effect. If we add more of the heat-trapping gases to the air, the surface temperature must rise to force the same amount of radiation up through the atmosphere to balance the absorbed sunlight.

The concentrations of carbon dioxide and methane measured in this way show the beginning of the increases two centuries ago as the world's population was rising rapidly and the industrial revolution was getting underway.

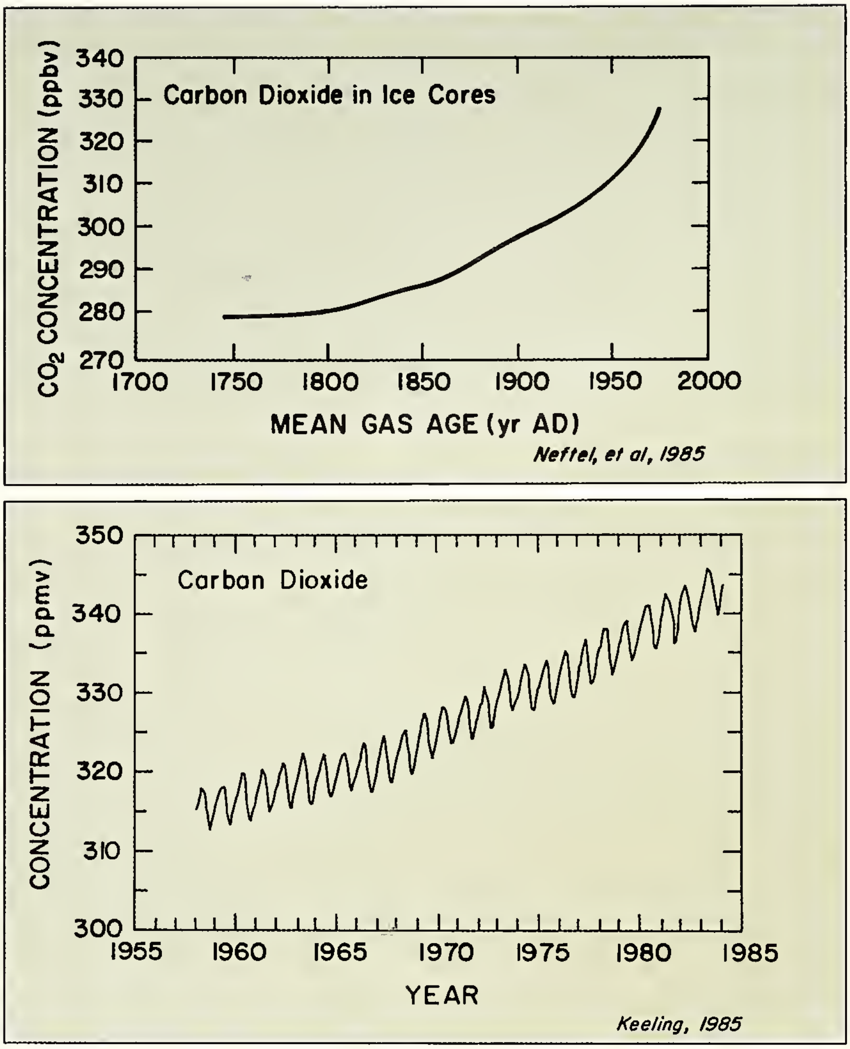
Measurements such as these, combined with calculations of the interactions of these heat-trapping gases with the climate of the earth, lead to the expectation of an increasing temperature of the earth's surface in the years to come.

Studies of past climate changes can tell us something about what to expect as the climate heats. These studies show that even a slow change in climate can have dramatic effects if it continues long enough. As the last ice age retreated, the earth warmed, slowly, for several thousand years. The amount of the warming can be estimated, once again from information derived from polar ice cores. Two forms of oxygen, one slightly heavier that the other, occur in ice, and the ratio of the amounts of the two reflects the temperature at which the snow formed.

We know relatively little about the direct impacts this warming had on people, but we can trace forest cover from the grains of pollen left behind by the trees. There were, during this warming period, major changes in the forests in North America. Trees species that grew in Ohio and Michigan migrated far up into Canada to find a climate they could thrive in, and other kinds of trees from the deep South moved into Ohio and Michigan.

There have been much smaller climate changes since the so-called Little Ice Age a few centuries ago and a warm period in the Eleventh Century, both of which damaged marginal societies and forced shifts in agricultural and other practices.

The climate heating projected for the com-



Neftel, et al, 1985

Keeling, 1985

Top figure shows concentration of carbon dioxide in the air found trapped in Antarctic ice at various depths below the surface. The ice core was drilled during the antarctic summer 1983/84 at Siple Station. The concentrations are plotted in parts per million by volume. Bottom graph shows monthly average measurements of the carbon dioxide concentration in the air. These measurements are made near the top of Mauna Loa, in the Hawaiian Islands, where the air is clean and free of local influences. The annual fall and rise of the concentration is created when plants use carbon dioxide as their food during spring and summer.

ing years is faster, and if it continues long enough, larger than these historical events. The current pattern of heat-trapping gas emissions, if continued unabated into late in the next century, will likely result in an earth as much warmer than today as we are now warmer than the last ice age.

But sooner and more important: the heating in the next few decades is projected to be five to ten times as fast as any climate change human civilizations have so far experienced.

Will the forests have to migrate further? Experts in forest studies caution that the effect will be quite different this time. They believe that many tree species cannot migrate five or ten times as fast as they did back then -- by the time a tree matures enough to produce seeds the climate will be unfavorable for those seeds to take hold and produce the next generation. Even resilient, highly diversified forests, well adapted to survive many problems, will experience new stresses to be added to the insect, disease, fire, and extreme weather events they must survive at present.

As the climate continues to heat, for example, evaporation will increase and some areas will undergo a decreasing moisture availability. As forests in such areas attempt to recover from the fires and windstorms that they occasionally experience, some of the forest species will find conditions no longer favorable and will vanish, decreasing diversity and increasing overall vulnerability.

Sea level has risen ten centimeters in the last century; will it rise further? The level of the sea is known to have been low during ice ages when much water is stored as ice in polar regions, and high during warmer periods when some of this ice melts. A rising sea level should be part of the pattern of climate heating.

Will we be able to hold back the sea or move back from the shore fast enough? The projection is for the sea to rise about five times as fast in the coming years as it has in the past century. Wetlands will attempt to move inland, but will be blocked in some cases by steeply rising land and in some by cities or other developments that society will not be willing to sacrifice to the rising tide.

There are many other impacts to be expected from such a rapid change in conditions. But with these sorts of possibilities in view, it is important to ask: just how reliable are these climate projections? Scientists attempting to answer this question use as their tool numerical simulations, or mathematical models, of the climate. They put together as much of their detailed understanding of the forces that drive the climate as they can fit into the world's largest computers, and they calculate what the climate will be like with more heat-trapping gases in the air.

This is a difficult, expensive, and time consuming process, and only a few scientific groups around the world have both the scientific expertise and the supercomputers needed to develop such models. Nevertheless, there has been rapid progress in producing the large, complex models required for climate projections, and today the varied models agree that the current pattern of emissions of heat-trapping gases will produce a rapid heating of the earth's surface in the coming decades.

The construction of these models represents a major scientific effort, but perhaps the most difficult problem scientists face is deciding how reliable the models are in projecting future conditions. As a result, climate models have received intense and repeated scrutiny and various ways been devised to test them. These climate models, for example, have been used to calculate today's climate, and the results compared in great detail with what we actually observe. The models have been used to compute past climates where reconstructions are available, and again, comparisons made. They have been used to calculate the difference between summer and winter -- a brief but quite large climate change. And related models have been used to compute the climates of Mars and Venus, one of which has much less of a heat trapping atmosphere than we do, and one much more.

The models have performed well on the tests to which they are subjected, and confidence in their projections has grown. There is today a strong scientific consensus that the global heating projected by these models must be taken seriously.

There are two major remaining areas of uncertainty and controversy with the models. The first is in just how rapid the heating will be. Different models give somewhat different estimates. The statement used here - that the change will be five to ten times as fast as historical climate changes, based on a heating rate averaged over the earth of 0.3 degrees centigrade per decade - is somewhere near the middle. Some models say only three times as fast; some say more than ten.

The other area of uncertainty is in local effects - how much of the heating will show up at each location on earth, and will each place get more or less rain. Scientists have reached a consensus that global average heating will occur and that its value will most likely be within the range mentioned above, but there is still much work to do to get the details straight.

All of the models show the world getting warmer, for example, but only most of the models show the midwestern U.S. getting dry during the growing season. There is much work underway to resolve these uncertainties to the extent possible as speedily as talent and resources will permit.

Since climate heating results from such important activities as using fuel and growing food, even though the technology exists to slow it down, it will take an unprecedented display of political will and international cooperation to do so. Some experts have therefore turned their attention to steps to adapt to the change. Can we adapt? Recently the government of Canada brought together experts from all around the world to discuss "The Changing Atmosphere," including the interrelated issues of ozone depletion, toxic air pollutants, and climate heating. The prime ministers of both Canada and Norway attended, as did ministers of the environment from a number of countries. The final conclusion of the meeting was issued as a several page statement. A few excerpts will convey the flavor of that report:

"The earth's atmosphere is being changed at an unprecedented rate. . .

"These changes represent a major threat to international security. . .

"Far-reaching impacts will be caused by global warming and sea level rise...

"The best predictions available indicate potentially severe economic and social dislocation for present and future generations, which will worsen international tensions and increase the risk of conflicts among and within nations.

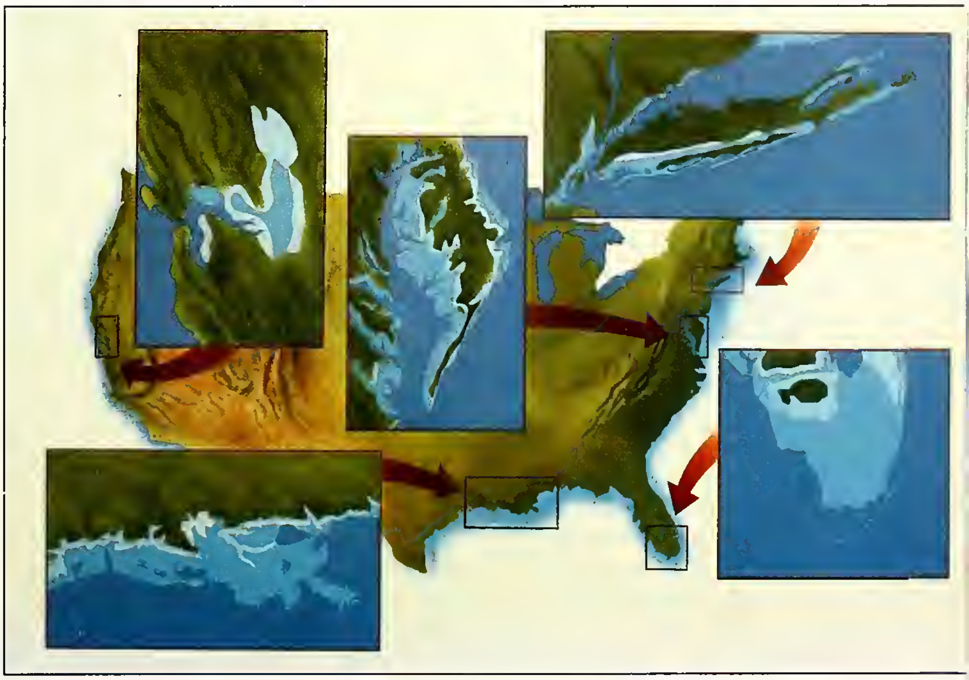
"It is imperative to act now."

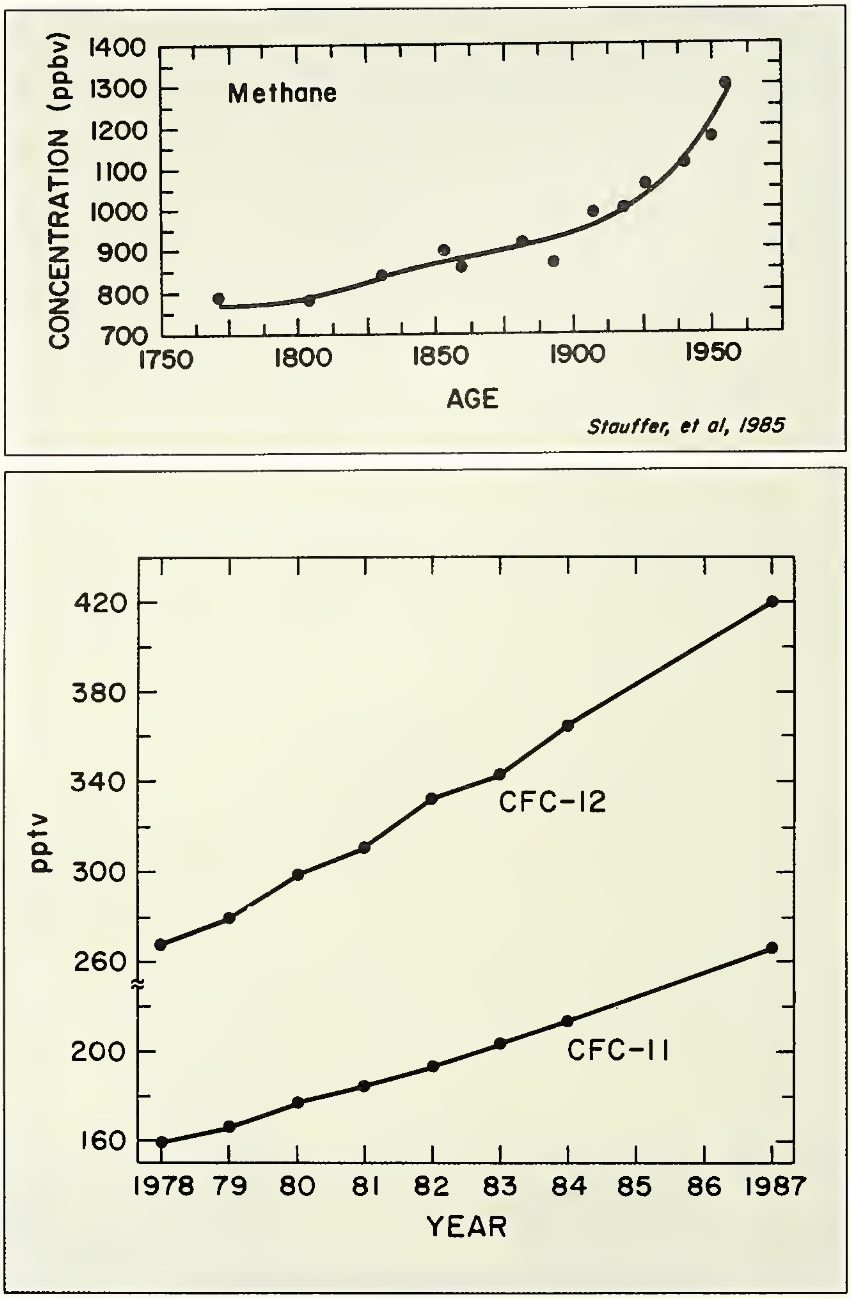
This final quote arose from the judgment of the group that the rate of change predicted will make planned and effective adaptation expensive and difficult. The conclusion, therefore, is that society should take prompt steps to slow the heating of the climate to give ourselves a reasonable chance to adapt.

But can this change be slowed? The answer is a guarded yes. Carbon dioxide is the gas most driving the climate change, and carbon dioxide is placed in the atmosphere in large quantities by the use of fossil fuel. If the heating is to be slowed, society must use less

A rise in sea level of 4.5 m would inundate large parts of the U.S. coastline and, of course, most of the major ports. The cities on the map below would probably be partly or totally submerged by water.

Rob Wood, SRW / (copyright) 1986 Discover Publications





Stauffer, et al, 1985

Methane concentrations found in ice cores (top) from Siple Station and from the South Pole are shown at top. The units of concentration are parts per billion by volume. The fastest growing greenhouse gases are the synthetic chlorofluorocarbons (bottom) which are used in refrigerators, automobile air conditioners, foam blowing, and other industrial uses. Diagram is in units of parts per trillion by volume.

fossil fuel.

Two decades ago most people thought that fossil fuel was so closely associated with prosperity that we could not, or at least should not, slow its use. But the price increases of the 1970's caused major re-examination of that assumption.

There have been many studies on this question by all sorts of groups - scientific groups, engineering groups, economists, environmentalists, learned academies, and mixed committees of all sorts. Almost without exception, these studies call for energy conservation as the top priority step in dealing with our problems, both the problem of energy supply and the problem of climate change.

In addition, there has been a striking evolution in these studies over time. The early reports call for conservation because the authors feared we had to, whether it was desirable or not. The later groups call for conservation through improvements in the efficiency with which we use energy, and they see such steps as not only solving atmospheric problems but economically desirable as well.

These later groups seemed to have surprised themselves when they looked at the details. They find the opportunities for efficiency improvements larger, not smaller, than they had thought, and they note that in all the major areas of energy use, building heating and lighting, appliances, transportation, and industry, already proven technologies are available to do more with less. Moreover, our country stands to gain large monetary savings by the steady and wide introduction of these efficient methods and devices.

The political problems, however, are severe. Even though the country as a whole could be gaining billions of dollars a year through energy efficiency, the picture will appear quite different to the coal miner who is out of work, the mine owner whose profits have decreased, and to those who represent either of these groups in the legislature. Can some of the societal savings be directed to those who lose as fossil energy is displaced by efficient equipment? This is a difficult challenge, indeed.

If the political will can be found, the short term answer to how to slow the climate change is known: policies to encourage efficient use of energy are universally recognized as the quickest and easiest way to get started on what must be done. For the longer term we must examine the difficult problems of developing major sources of renewable energy, of stabilizing the population of our country and of the earth, and of aiding Third World countries to move toward the prosperous future they desire without repeating the inefficient fossil fuel evolution of the now developed world.

Deforestation adds to the atmospheric burden of carbon dioxide as trees are cut to create cropland and the tree material burns or decays. So slowing or eliminating the rapid deforestation, a step already called for by those who are monitoring species loss in these areas, can ease somewhat the carbon dioxide problem.

Turning this argument around, planting new forest would result in carbon dioxide being removed from the air for the years during which the forest is gaining in biomass and retained as long as the forest is harvested in a sustainable manner.

Planting one-tenth of all current crop and pasture land to trees would substantially lessen the carbon dioxide problem. However, the political problems in doing so are perhaps even larger than decreasing the burning of coal and oil.

An international effort to slow the climate heating may need to involve both kinds of programs, since neither may be enough by itself.

This discussion has focused on how to reduce carbon dioxide emissions. The increase in methane in the air is more difficult to resolve. Some methane escapes to the air from coal mine ventilation and leaky pipelines, so that steps to lessen fossil fuel use will also decrease methane releases. But the major sources are more diverse, and the atmospheric chemistry is less well understood. Here we must hope that more studies will show ways in which the emissions can be slowed.

The chlorofluorocarbons are already the subject of an international agreement designed to protect the ozone layer. If ratified and observed, this treaty will cause production of the major heat-trapping CFC's to decline by about 40 percent by the year 2009. Further decreases will be needed to prevent the atmospheric concentrations from continuing to rise, but the existence of the treaty may well ease the way for further cutbacks to be negotiated.

Nitrous oxide emissions will decline as fossil fuel use is decreased, but fertilizer may be too essential to allow much adjustment in agricultural emissions. The best strategy may be to cut emissions of carbon dioxide and chlorofluorocarbons faster than we would otherwise to compensate for our inability to do much about methane.

This problem is a global one, and must finally involve all countries in an agreement to stabilize the composition of the atmosphere. But most of the heat trapping gases are put into the air by the industrialized countries, and without the leadership of these nations no progress will be made. The United States, the largest emitter, can take useful steps long before a comprehensive international agreement can be hammered out. ☐

What We Can Do [illegible]

A wide range of possible responses by the U.S. could improve energy security, decrease our foreign debt, reduce acid rain and urban smog, as well as slowing these climate changes. Examples of such steps are:

1. Encourage efficiency in all fossil fuel use by means of subsidy, taxes, or regulation. More efficient autos, insulation, light bulbs, furnaces, and refrigerators already exist and need only a small push to make their economic pay-off visible.

2. Work for rapid elimination of the release of those synthetic chemicals, such as the chlorofluorocarbons, that trap heat and which remain in the atmosphere for long periods of time.

3. Encourage the improvement of alternative energy sources so that one or more will be ready to replace fossil fuels as we exhaust the opportunities for efficiency gains.

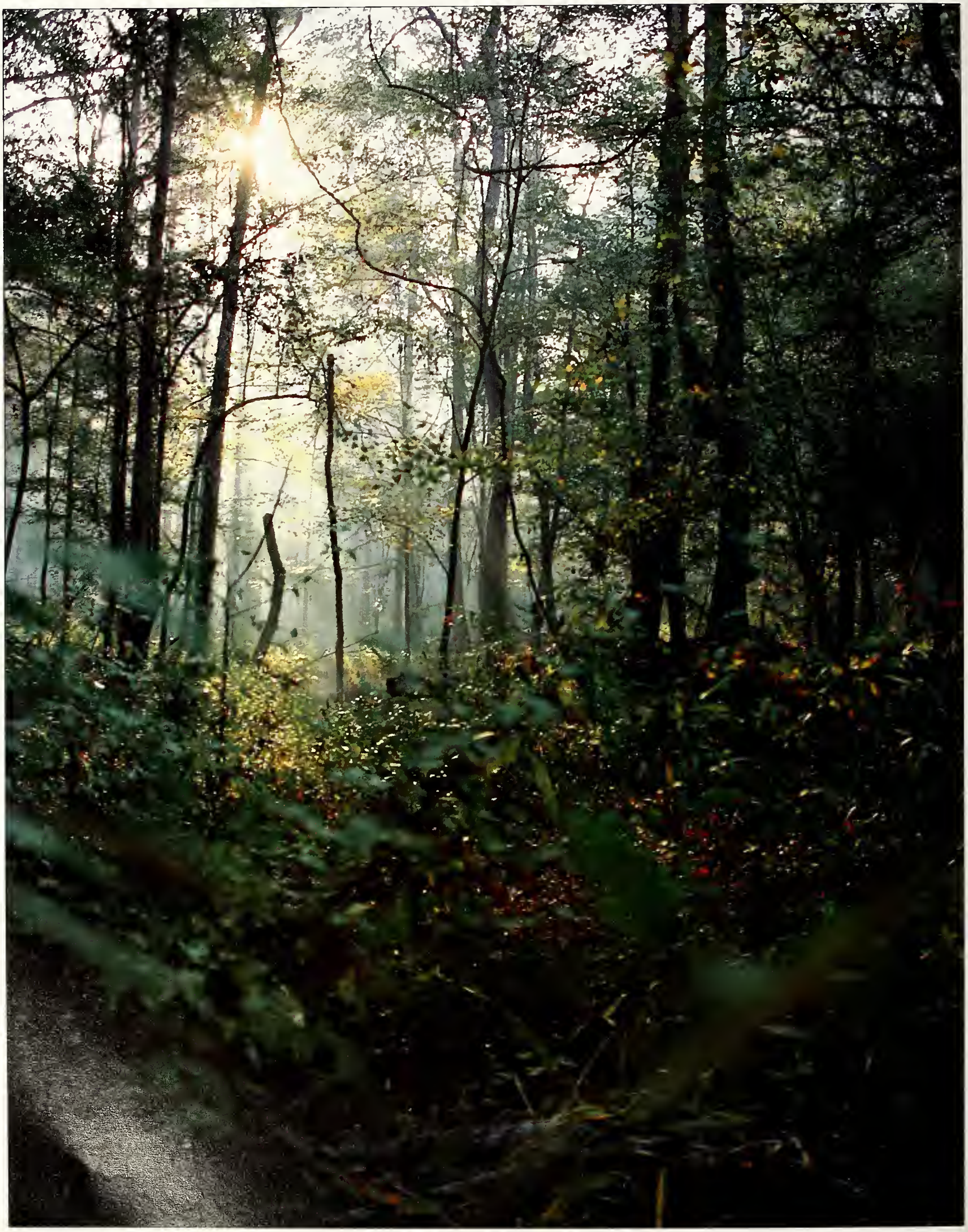
4. Encourage the replacement of coal with natural gas. All fossil fuels are not equal when it comes to carbon dioxide. For the same heat, natural gas produces about half as much carbon dioxide as coal.

5. Stay away from plans that call for making methanol (for auto fuel) from coal.

6. Encourage plans that gain energy from the methane that is now flared or which escapes from municipal waste.

7. Encourage the study of the sources and chemistry of methane and other heat trapping gases.

8. Begin the long process of international negotiations on steps to stabilize the composition of the atmosphere.



Photograph by K. Ribbeck

CRP Expanded

Good News for Wildlife

Wetlands and bottomland hardwoods are disappearing at an alarming rate. Efforts to restore them, with programs such as the Conservation Reserve Program, can begin with such small acts as simply planting a tree.

BY PATRICIA L. GROETSCH

The Conservation Reserve Program (CRP) was created by the Food Security Act (FSA) of 1985. This voluntary federal program is designed to improve soil, water, and wildlife resources on farmlands with highly erodible soils or with fields marginally suited for agriculture.

Nationwide, 45 million acres have been identified as eligible, 258,000 acres of which are located in Louisiana. Landowners enrolled in the program sign a 10-year contract to retire the qualified lands and agree to implement conservation practices. Such practices include converting the area to permanent grass and tree cover which benefit native wildlife while at the same time reducing soil erosion and agricultural run-off.

In turn, these landowners receive rental payments from the federal government for the 10-year contract period (up to $50,000 per year) and a one-time cost-share payment (approximately 50%) which applies to the conservation practice.

Currently, 90,000 acres have been signed-up in Louisiana, 44% of which have been planted to trees. Across the state, 31 parishes are involved with over 11,000 farmers enrolled.

The CRP has recently been expanded to include cropped wetlands during the remaining sign-ups. Landowners may enroll croplands which were defined under the 1985 FSA as wetland or farmed wetland and which have been farmed any two of the crop years between 1981 and 1985. Fields which are 1/3 or greater wetland or farmed wetland are eligible for enrollment.

Wetland vegetation native to the area must be re-established on the site. This may include bottomland hardwood species such as oaks, hickories, and native sweet pecan as well as annual and perennial wetland herbaceous

Photographs courtesy Soil Conservation Service

Farmland runoff is a major contributor to stream pollution. Vegetative filter strips not only serve to reduce water pollution, but also provide wildlife habitat and corridors which allow animals to move from one location to another.

species. In addition, water control measures which restore and enhance wetland conditions may be initiated. Native upland vegetation must be re-established on the surrounding enrolled uplands.

As in the past, the Agricultural Stabilization and Conservation Service (ASCS) will cost-share half of the landowner's expense in addition to the rental payment the landowner will receive. The Soil Conservation Service (SCS) and the U.S. Fish and Wildlife Service will be available to prepare plans for structural facilities and ditch blocks where wetlands can be restored or enhanced.

As a result of the CRP inclusion of these wet soils, an estimated additional 650,000 acres are eligible to be enrolled in Louisiana.

This expansion of the CRP to include wetlands and cropped wetlands is significant to Louisianans. Since 1934, bottomland hardwoods have been reduced by 37% in this state. Most of these losses (70%) have occurred between the mid-1960's and mid-1980's when land clearing and conversion averaged 85,000 acres per year.

The state's forested wetland loss from mid-1950 to mid-1970 (1.3 million acres) represented 22% of the national loss for this habitat type. Between 1974 and 1984, an additional 870,000 acres of bottomland hardwood forested habitat, primarily in the Louisiana Delta, were cleared. The farming of these wet, flood-prone soils is not only an economic burden to the farmer, but also decreases the land's value to the public as areas for timber production, flood protection, ground-water recharge, water quality improvement, and wildlife habitat.

While there have been and will continue to be efforts at the state and federal level to protect Louisiana's wetlands, private landowners can provide far-reaching impacts since they control the vast majority of this habitat type. Along the north and south Louisiana Delta of the Mississippi River, approximately 300,000 acres of bottomland hardwoods are in public ownership. This, however, represents less than 10% of the state's bottomlands along the river.

Restoration of quality wetland sites is a cornerstone of national management plans such as the North American Waterfowl Management Plan and the Draft American Woodcock Management plan. Forested wetlands provide high quality habitat for several species of ducks. Mallards and wood ducks, the two most common waterfowl species within this habitat type, comprise over 25% of the statewide harvest in most years. Loss and degradation of habitat have been identified as the major waterfowl management problems within North America. Hence, the loss of forested wetlands in the South has national as well as regional significance.

The benefits of bottomland hardwood restoration are not, however, limited to waterfowl. Studies have shown that the majority of all the birds of eastern North America use bottomlands at one time or another. For example, the Atchafalaya Basin is used by over 300 species of birds; this figure primarily represents nongame birds protected under the Federal Migratory Bird Treaty Act. Many of these species use a variety of habitats, but reach their greatest abundance in the environment afforded them by bottomland hardwood forests. Others, however, are highly dependent on bottomlands, with some if not all of their populations occurring in this habitat type.

Louisiana bottomland hardwood forests provide important nesting habitat for 17 neotropical migrant birds, including Bachman's warblers (federally-listed as endangered) and rare swallow-tailed kites. Maintenance of North American habitat is especially critical for these species, as degradation of the wintering grounds is placing the well-being of neotropical migrants in jeopardy. To these birds especially, and to a plethora of other migratory birds, bottomland forests are very important.

In anticipation of the cropped wetland provision added to the CRP, the Louisiana Office of Forestry has increased their supply of hardwoods to be made available to the public in an effort to restore bottomland hardwood sites.

The establishment of vegetative filter strips is a second practice which was recently approved for inclusion into the CRP. This practice can be applied to lands without erosion criteria and has the potential to greatly enhance farm wildlife and aquatic populations.

Lands eligible to be enrolled in CRP under the filter strip provision must be cropland located adjacent and parallel to a continually flowing creek or river, a seasonal stream that flows during a portion of the year, or a permanent body of water (e.g., lake or wetlands) with a surface area of at least five acres. This land also must have been farmed in at least two of the crop years between 1981 and 1985. The property under contract can be planted to grasses, trees, shrubs, or forbs and cannot be grazed or harvested while enrolled. Strips are required to be between 66 and 99 feet in width.

Many benefits can be derived from the presence of filter strips adjacent to water bodies. Vegetated strips serve to reduce the amount of water run-off from cropland, which often contains soil, fertilizers, pesticides, animal wastes, and other organic matter. Turbidity caused by soil entering streams and lakes can destroy fish spawning grounds and clog delicate fish gills. Organic matter, animal wastes, and excess nutrients can cause explosive algal blooms and growth of water plants which eventually will deplete oxygen reserves in the water as they die and decompose.

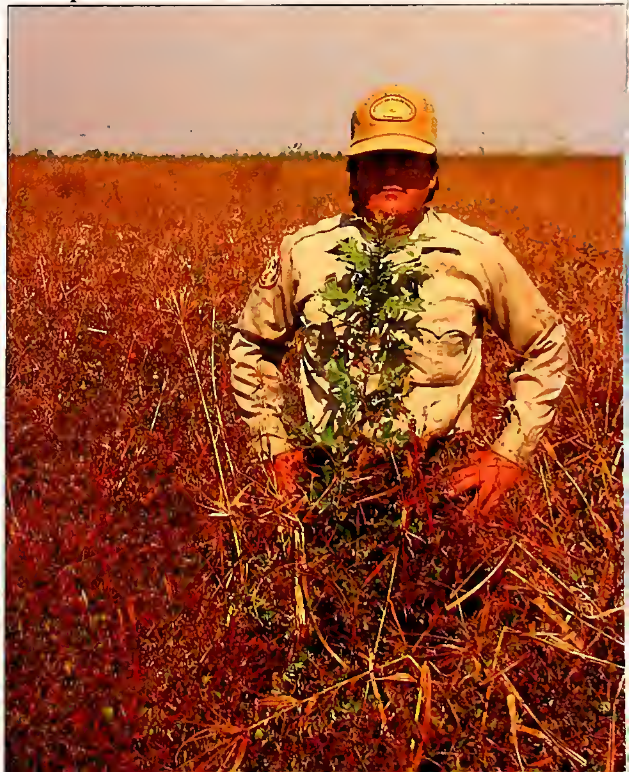
Research has shown that certain pesticides can concentrate in the flesh of fish and ultimately cause serious health problems in wildlife and humans who consume them. Vegetated filter strips can serve to reduce the amount of sediment, chemicals, and organic matter entering water bodies adjacent to and downstream from cropland.

Another advantage of filter strips is the wildlife corridor created by the grass, tree, or wildlife plantings. This corridor may serve to provide for the movement of animals from one location to another and can act as an aid in the reintroduction of certain species into an area, such as deer and squirrels.

Vegetated filter strips can also serve as breeding and wintering grounds for songbirds, waterfowl, and various species of mammals as well as increasing the aesthetic value of the creek, river, or lake.

The next sign-up for the Conservation Reserve Program is February 6 through February 24, 1989. If you have any questions regarding the eligibility of your land for CRP enrollment or if you are interested in improving the wildlife value of your marginal cropland, you can contact your local ASCS or SCS office. In addition, biologists with the Louisiana Department of Wildlife and Fisheries are available to address general habitat questions which you may have. □

Photograph by K. Ribbeck



Buoy marks site where old Chevron oil platform was lowered into place as artificial reef.

TURNING OVER A NEW REEF

PHOTOGRAPHY & ARTICLE BY RICK KASPRZAK

It moved slowly at first, but quickly gained momentum and in less than three minutes the large petroleum platform slipped beneath the surface of the Gulf of Mexico. To some this may appear to be an oil man's worst nightmare, but this event was actually applauded by those witnessing it on Diamond Services derrick barge #85.

The structure became the second of many reefs slated for deployment along the Louisiana coast as part of Louisiana's Artificial Reef Program.

The 1,125 ton petroleum platform, formerly owned and operated by Chevron USA, was toppled in place in South Timbalier block 128 about 20 miles southwest of Grand Isle.

Under normal circumstances, federal law requires obsolete oil and gas platforms to be removed within one year after they cease production. Once the wells have been depleted and plugged, the old structure is severed from the ocean floor, towed to shore, cut up and sold for scrap, the losers being Louisiana fishermen.

Prior to 1986, when the Louisiana Artificial Reef Program was created, such would have been the fate of Chevron's platform in South Timbalier 128. However, Tommy Laurendine, an engineer for Chevron, couldn't see turning the aging structure into a pile of scrap. He felt the platform could still serve a useful purpose as an artificial reef. Laurendine had heard about Louisiana's new program which converted obsolete oil and gas platforms into artifical reefs. Since this structure was already in one of the eight planning areas selected by the Artificial Reef Council earlier in the year, he felt ST-128 would be a prime candidate.

The Louisiana artificial reef staff agreed, not only was it in one of the eight planning areas, but it was close enough to shore to be readily utilized by Louisiana's fishing and diving community.

The obsolete platform, like natural reefs, would provide its reef dwellers with the hard-bottom habitat necessary to sustain them. The framing would provide the necessary surface to raise communities of alga, corals, bryozoans and barnacles. These in turn would provide hiding places and food for large communities of fish and other marine life such as lobsters and crabs. Because the platforms provide an important source of hard substrate which naturally attract fish, they harbor 20-50 times more than the nearby soft-bottom environments of the

The obsolete platform, like natural reefs, will provide its reef dwellers with hard-bottom habitat necessary to sustain them.

Gulf of Mexico.

Since the platform had been sitting on the sea floor since 1955, it already had a well-developed marine fauna. The problem was how to make it into a reef. After nearly nine months of planning, negotiations between Chevron and the Department of Wildlife and Fisheries, and applying for and obtaining federal permits, construction was ready to begin. Workers from the derrick barge boarded the 160-foot-tall structure and began cutting huge holes in the deck plate to provide additional hiding places for its new inhabitants and reduce drag on the structure generated from underwater currents.

The next phase of the operation required severing the structure from the sea floor. Over thirty years ago pilings were driven through the legs of the jacket to anchor the structure to the Gulf bottom. Utilizing explosives, the pilings were cut sixteen feet below the mud line, freeing the structure. Diamond's derrick barge then moved alongside the platform where chains and cables were attached to topple it over. It took approximately three minutes to convert Chevron's ST-128 platform into Louisiana's second artificial reef.

Louisiana's new reef creates over 21,000 square feet of hard-bottom substrate, occupies 7,200 square feet of Gulf bottom and encloses approximately one million cubic feet of water. Virginia Van Sickle, Secretary of the Louisiana Department of Wildlife and Fisheries, noted, "Toppling the structure in place rather than scrapping it onshore will help maintain, and even enhance, this valuable fishery habitat essential to many of Louisiana's fisheries."

Large catches of fish over the reef were reported almost immediately after it was deployed.

In addition to donation of the structure, Chevron also donated a portion of its savings realized through their participation in the program. Since the program receives no funds from the state's general fund, funding for buoys and maintenance of the reefs rests solely on the donations received from the oil and gas companies. As Tommy Laurendine pointed out, "all parties came away happy. The state got an artifical reef for its fishermen, Chevron saved some money and provided reef habitat and most importantly the fish kept their home."

Before departing the site, the workers placed a nine-by-two- foot yellow buoy on the reef to mark its location and provide for safety of navigation. The new reef, named Snapper Reef, is located at 28 degrees 40 minutes 14.01 seconds north latitude by 90 degrees 15 minutes 48.73 seconds west longitude. A mooring buoy was also attached directly to the reef to provide anchorage for reef users.

In November 1988, less than one month after the toppling, divers representing the Louisiana Department of Wildlife and Fisheries and Louisiana State University dove Snapper Reef to determine how well old ST-128 was recruiting fish populations. Preliminary investigations indicated the structure had recruited fish populations similar to those prior to toppling. Large schools of blue runners, amberjack and spadefish were observed swimming amongst the cross members and decking. Exotics such as queen angels, triggerfish and butterfly fish were already browsing on the encrusting organisms. David Harrelson Jr., captain of Charlie Hardison's Starfish out of Fourchon, confirmed the findings. He reported large catches of snapper and a few cobia over the reef almost immediately after it was deployed.

In short, ST-128 once slated for the scrap heap, was still living an active and productive life as an artificial reef.

And Mobil and Exxon Make Three

In late December, Louisiana completed construction on its third reef. This reef was donated in a cooperative effort between Exxon Company USA and Mobil Exploration and Producing U.S. Inc. The reef, located in West Cameron Area Block 616, is the largest artifical reef to date. It is composed of the underwater superstructure of three obsolete oil and gas structures.

Construction on the reef began in late November when McDermott's newest and largest derrick barge in the Gulf of Mexico, the DB 50, plucked Exxon's High Island 342-B and 343-A structures from offshore Texas and transported them to Louisiana's West Cameron artificial reef site. Mobil completed the reef by deploying a third structure which was formerly located off Corpus Christi, Texas.

Despite the fact that these companies had to transport the structures from offshore Texas to offshore Louisiana, they were still able to save enough money to contribute to Louisiana's Artificial Reef Program. □

Photograph by Richard Bejarano

The Blue Crab

BY VINCE GUILLORY

The blue crab is appropriately known as Callinectes sapidus to marine biologists. Callinectes is Greek for "beautiful swimmer" and sapidus means "tasty" in Latin. The blue crab is one of the most abundant macroinvertebrates in Louisiana's estuaries, and supports a valuable commercial fishery. In 1987 Louisiana became the leading producer of blue crabs in the country - 52.3 million pounds valued at 20.1 million dollars.

The life history of the blue crab involves a complex cycle of planktonic (free floating), nektonic (free swimming), and benthic (bottom dwelling) stages which occur throughout the estuarine-nearshore marine environments.

Unlike most other marine organisms, mating and spawning occur at different times. Mating takes place in low salinity waters from spring to fall. Females only mate when they are in the soft shell stage immediately following their final molt. Sperm stored in the female remain viable for a year or more and may be used for repeated spawnings.

After mating, females migrate to high salinity waters in the lower estuary or nearshore Gulf and spawn from two to six months later. The female extrudes fertilized eggs into a mass or "sponge" that becomes attached to setae (hairlike branches) of the appendages of the abdomen. Each sponge may contain from 700,000 to 2,000,000 eggs. Hatching of eggs must occur at salinites of 23-33 parts per thousand and temperatures of 19-29 degrees centigrade.

Growth and development of the blue crab can occur only during a molt, during which a variety of morphological behavioral, and physiological changes occur. The number of molts during certain life stages is relatively uniform, but the molting rate decreases with increased size and is affected by many environmental factors.

After about two weeks, the eggs hatch into planktonic larvae called zoea, which are carried by currents offshore. After seven molts and from 30-50 days, the zoea transform into the megalops larvae, which can either swim or crawl. Megalopae are transported back into the estuaries, and after 6-20 days, transform to the juvenile "first crab" about 2.5 mm in width. These juveniles gradually migrate into shallower, less saline waters in the upper estuary where they grow and mature.

Juvenile crabs will molt approximately 18-20 times before reaching maturity. The molting cycle consists of the following stages: post molt; intermolt; white line; pink line; and red line. The latter two stages are utilized by soft shell crab operators for identifying crabs ready to shed their hard shell. Growth is affected by temperature, molting frequency, and food availability, although generally blue crabs will reach commercial size (five inches) one year after hatching. The maximum life span is usually three years.

Adult blue crabs are excellent swimmers and can migrate long distances. Migrations of adults are related to mating/spawning activities, season, water temperature, and, to a lesser extent, environmental conditions. □

Confessions of a Catalog Junkie

FUNNY SIDE UP

BY GLENN HARRIS

What did you get for Christmas? Was it what you wanted, or are you faced with having to clean out your sock drawer to make room for more gaudy argyles you'll never wear?

The only good thing about finding purple and orange striped argyles under the tree is that you don't have to worry about what to give Cousin Melvin next year. Just go to the sock drawer, pull out the argyles and send them to Melvin.

In a couple of years, however, you'll probably get them back. Next Christmas, Melvin will give the socks to Uncle Wilbur who'll give them to you the following year.

After I dropped a couple of subtle hints to my wife, she finally agreed to let me do my own Christmas shopping from the dozens of outdoor catalogs I get in the mail. She picked up on my hints fairly easily, I thought. Perhaps it was the dead weight of my clinging to her ankles, snuffling and begging, that finally did the trick.

I confess......I'm a outdoor catalog junkie. Lay the latest edition before me and I automatically reach for my credit card with one hand and the telephone with the other. The phone clerks and I are on a first name basis. My sore-backed mailman hates me.

The problem is, I lose control when with trembling fingers, I leaf through the glossy pages, ogling the sensuous offerings. This year's catalogs contain items that will jolt any recovering catalog-aholic right off the wagon.

For example, I can now purchase camouflage apparel in green woodland, brown woodland, shadow bark, tree bark, real tree, tree shadow, tree moss, snow shadow, blaze orange, cattail, tiger stripe, snow white and corn stalk. This means I can fade into oblivion in almost any environment. The cover-up will only be complete, however, when they develop a "living room couch" pattern so I can enjoy a nap while my beloved searches the house for me, trailing her list of "honey do's" behind.

Drawing by David Norwood

With all the hunting aids available in this year's stack of catalogs, you will have absolutely no excuse for not bagging a buck next season.

You can order - I promise I'm not making this up - a bag of freeze dried doe droppings (try saying that three times real fast). Or for the real serious hunter, they offer dehydrated buck tarsal glands. The latter comes with a bottle of elixir consisting of a mixture of buck urine, interdigital gland secretions and body fluids. Rehydrate the tarsal gland with the mixture to get, the ad says, "an angry reaction from a buck". Can you blame him? If somebody tried to rehydrate my tarsal, I'd get mad too.

Turn the page and there are all the "scents". There's the always popular doe-in-heat concoction guaranteed to cause an old buck's eyes to glaze over with ardor as, grunting and wheezing, he runs into trees and trips over logs. Then, there are masking scents collected from foxes and skunks. I assume it is secured by a fleet-footed guy who sprints along behind foxes and skunks, bottle in hand. They even have cover scents that totally remove human odor. There have been times I wished for a bottle of that in a crowded elevator.

Flipping the pages, I find the deer calls. There are the popular rattlin' antlers. Clash them together to mimic two bucks fighting and any buck within hearing will rush to the action, pull up a log and take a seat to see if it will go ten rounds.

Next, there are grunt tubes that create the grunt and wheeze sounds a buck makes when he's running into trees and tripping over logs.

My favorite item, though, is the fanny pack. Many times I have come out of the woods, dog tired, with my rear end dragging out my tracks. Now, I can pack it out. ☐

LAW LINES

A Reminder for Anglers

The Louisiana Department of Wildlife and Fisheries has cautioned recreational anglers that state law forbids them to cut up saltwater finfish before bringing their catch ashore.

Col. Winton Vidrine of LDWF's Enforcement Division said the warning was prompted by a case in which seven men were charged with violating the statute.

Vidrine said that Lt. Samuel Martin and Sgt. Robley Guidry boarded a crewboat in the Bay Cocodrie area of Terrebonne Parish and found quantities of speckled trout that had been fileted.

The agents issued citations and confiscated the fish, which later was donated to charity.

Col. Vidrine called the attention of anglers to RS 56:325.2, which states that "all saltwater finfish possessed by a recreational fisherman shall have the head and caudal fin (tail) intact when set or put on shore from a vessel."

Vidrine added that while on board the boat, finfish must be kept in condition to be identified and measured.

Danger in the Woods

Law enforcement can be more hazardous in the woods than on city streets.

Clark Bavin, enforcement chief of the U.S. Fish and Wildlife Service, says recent studies disclose that assaults on wildlife officers are nine times more likely to be fatal than those on other law enforcement personnel.

For one thing, four out of five people who assault wildlife officers are carrying firearms as opposed to one in five for their urban counterparts.

During the year, there were 128 assaults on conservation officers. Injuries resulted from 28 of those assaults. Two state officers--one in Kentucky and one in Florida--died of their injuries

Safari Club Honors Agent: Lt. Jimmy McCoy of Watson accepts a commendation plaque from Shikar-Safari Club International designating him as Louisiana's Wildlife Officer of the Year. Representing the organization of conservationists and hunters is C. Richard Cochran of Lafayette. McCoy serves in Livingston Parish as an enforcement agent of the Louisiana Department of Wildlife and Fisheries.

Behind the Badge

BY LT. KEITH LACAZE

The opening weekend of duck season is always a big event for the wildlife enforcement agent. A lot of ground has to be covered. Many hunters are checked.

The Nov. 19 opening of the 1988-89 waterfowl season was even more significant than usual. The bag limit for ducks had been lowered, shooting time was set back to sunrise, and 29 parishes required hunting with steel shot. All this was due to the continued dwindling of the duck population.

To compound the problem, Louisiana was suffering from the blows of widespread criticism as a troublesome poaching region and a serious overbagging area. The Louisiana hunter's reputation was in doubt.

Our Wildlife and Fisheries secretary, Virginia Van Sickle, places a high priority on law enforcement, particularly as regards waterfowl. She wanted to determine the real percentage of illegal hunting.

Deputy Secretary Kell McInnis and Enforcement Chief Winton Vidrine were requested to have agents keep a log of each hunter checked during duck season and whether or not a citation was issued as the result of each check.

With survey forms in hand, the enforcement agents hit the field. The figures for opening weekend were tabulated to provide an idea of what the rest of the season would be like.

Statewide, 1,407 hunters were checked, and 183 were ticketed. A total of 214 citations was written. Thirty-two hunters were charged with overbagging or attempting to overbag.

The figures indicated that 13 percent of the total hunters checked were in violation. Of the 183 cited hunters, 17.4 percent were charged with overbagging. Overall, only 2.2 percent of the 1,407 hunters checked were charged with overbagging.

The opening weekend numbers are only a fraction of what the total season tabulation will be when it becomes available. But it seems that violators are not as numerous as some believed.

Why? Maybe our sportsmen were not as bad as perceived. Perhaps they have realized what is happening to our waterfowl and have changed their attitudes toward hunting. Let's hope we've learned that the success of the hunt is not always measured by the weight of the bag at day's end.

Let's hope, too, that we will see a change from criticism to praise for the Louisiana sportsman.

Conservation Notes

3 Hunters Bag Shotguns

Their names drawn by lot, three lucky turkey hunters received a gift of new shotguns for taking part in a research program conducted by the Louisiana Department of Wildlife and Fisheries.

Hundreds of hunters cooperated in the project during the last turkey season, said Danny Timmer, the department's turkey study leader. Sportsmen took their turkeys to 200 check stations across the state to have the birds weighed, aged, measured and otherwise examined.

Timmer said hunter response was so good that 1,525 turkeys were examined--about twice as many as had been anticipated--and the program will be repeated this year.

Participating hunters became eligible for a drawing for three Remington 870 shotguns donated by the Louisiana Wild Turkey Federation and the Baton Rouge chapter of Safari Club International.

The winners were Ricky Holifield of Pearl River, Wiley Garrett of Coushatta and Don Breland of Picayune, Miss.

Speedup on Motorboats

New computer techniques are enabling the Department of Wildlife and Fisheries to speed up and improve its service to Louisiana's boating public.

But the program's success depends on boaters' cooperation in supplying required information when registering their craft, says the department's Motorboat Registration Section.

Department officials also urged owners to make sure that every boat built since 1973, whether commercially manufactured or homemade, carries a hull identification number on its transom.

The department is trying to maintain a 30-day turnaround on applications submitted by mail. Applications brought in person to the Motorboat Registration office in Baton Rouge are usually processed on the spot. However, it is the owner's responsibility to produce a current registration certificate or other necessary documents.

All applications must be completely filled out, it was stressed. If all blanks are not completed, the application will be returned unprocessed. Payment may be by check or money order.

New applications must be accompanied by proof of ownership--manufacturer's statement of origin, bill of sale or invoice with the hull identification number. If the boat has been brought in from another state, the owner must show a registration certificate or title from that state.

For older boats that are owned by an individual and have never been registered, the department requires a notarized statement explaining how the owner came into possession of the boat.

Transfer applications need a bill of sale, prior owner's registration certificate reassigning ownership, succession papers, repossession papers, inheritance papers or an affidavit from an attorney attesting to transfer of property.

If a registration certificate and/or boat numeral decals are lost in the mail within 30 days after being processed, the department will replace them free. If department records show that more than 30 days have elapsed, the registrant will be charged for duplicates.

Application forms and information may be obtained from any Wildlife and Fisheries office, or by writing or calling the Motorboat Registration Section, Department of Wildlife and Fisheries, P.O. Box 14796, Baton Rouge, LA 70898 (telephone 504/765-2898).

Cash for Conservancy

The ARCO Foundation has made a second $25,000 grant to the Louisiana Nature Conservancy, the state chapter of an international organization that identifies and preserves ecologically important land.

With the protection of Louisiana wetlands as a top priority, the Conservancy has recently focused its attention on the White Kitchen area of the Pearl River Basin, which includes a nesting area for water birds.

"We are impressed by the rapid progress the Conservancy is making through sound environmental projects," said Steve Mut, vice president and manager of ARCO Oil & Gas Co.'s Southeastern District in Lafayette. "And we are pleased to have a role in making such things happen in a state as important to us as Louisiana."

The $25,000 grant is earmarked for land acquisition. In 1986, ARCO donated a similar sum to help the Conservancy establish a Louisiana office.

Disease Manual Offered

Designed for use outdoors is a pocket-size, water-resistant new "Field Manual of Wildlife Diseases in the Southeastern United States." For quick reference, information is arranged by animal species rather than disease agent.

The handbook, compiled by William R. Davidson and Victor F. Nettles, is available postpaid for $10 from the College of Veterinary Medicine, University of Georgia, Athens, GA 30602.

Revenues Up in U.S.

Total revenues from hunting and fishing license sales in the 50 states increased about 5 percent in 1987 while fishing and hunting activity remained about the same as in the previous year, reports the U.S. Fish and Wildlife Service.

Latest figures show that money spent on licenses and associated permits, tags and stamps in fiscal 1987 reached $661 million, compared with $624 million in 1986.

A total of 15,819,366 people bought hunting licenses in 1987, compared with 15,773,190 in 1986. Fishing license purchasers numbered 30,350,321 in 1987, compared with 30,359,462 in 1986.

In Louisiana in 1987, according to the federal statistics, hunters paid $5,780,459 for licenses and permits while fishermen paid $2,982,308. There were 326,377 paid hunting license holders in Louisiana and 570,844 paid fishing license holders.

Hines Is Chairman

Bunkie physician Don Hines is serving as 1989 chairman of the Louisiana Wildlife and Fisheries Commission, the policy-making body of the Department of Wildlife and Fisheries. Commissioner Warren I. Pol of Baton Rouge is vice chairman.

Bald Eagles Flying High

The bald eagle, the bird that symbolizes America, is making a dramatic comeback in Louisiana, reports the state Department of Wildlife and Fisheries.

Aerial surveys conducted during the 1987-88 nesting season indicated that 36 pairs of bald eagles occupied nesting territories--double the count of 18 nesting pairs recorded in 1984.

A goal of 40 nesting pairs has been established for Louisiana by the Southeastern States Bald Eagle Recovery Team. Currently, Louisiana supports more pairs of nesting eagles than any other southeastern state except Florida.

Historically, bald eagles in Louisiana nested throughout the coastal region and along the Mississippi and Sabine rivers. Because bald eagles perch atop the food web, the effects of pesticide accumulation were especially damaging, and this once common species was reduced to only six or seven nesting pairs in 1972.

The bald eagles began their recovery in Louisiana with enforcement of the Endangered Species and Bald Eagle acts and with a reduction in the amount of hazardous pesticides entering the environment. The recovery plan for eagles in the southeastern states was approved in 1984 when 18 nesting pairs were known to exist in Louisiana.

Wildlife and Fisheries officials said that during the last nesting season, which started in October 1987 and stretched into mid-May of last year, complete productivity data were collected from 31 of the 36 active nests.

Of those 31 pairs, 23 successfully raised one or more young; at least 41 eaglets fledged. The average of 1.3 young per occupied nest exceeds the minimum of 0.9 believed to be necessary for a stable population, indicating that the number of nesting eagles in Louisiana should continue to increase.

Research on "Teddy Bears"

State and federal biologists have joined forces to gather information about the remnant population of black bear found in the bottomland hardwood areas along the Tensas River in northeast Louisiana and in the lower Atchafalaya Basin in south Louisiana.

The research program involves capturing bears with snares to obtain tissue and blood samples. Radio collars that will monitor the bears' habits and movements are attached, and the animals are then set free.

The study is being conducted under auspices of the Louisiana Department of Wildlife and Fisheries and the U.S. Fish and Wildlife Service. The Cooperative Wildlife Research Unit at LSU is participating.

The bear inhabiting Louisiana is believed to be a subspecies separate from the American black bear found in the rest of North America, and its population has dwindled from its former abundance in Louisiana.

At the turn of the century when bears were plentiful in this state, President Theodore Roosevelt made a well-publicized trip to the Tensas area.

The event was widely recorded by cartoonists of the era, and to this day, stuffed toy bears are known as "teddy bears." Thus Teddy Roosevelt is remembered not only as the father of the National Wildlife Refuge System but for having lent his name to the teddy bear.

The cooperative research study calls attention to the emphasis that has recently been placed on the Louisiana black bear by both state and federal wildlife resource agencies.

Although the secretive habits of the bear make encounters with man a rarity, all outdoorsmen and especially hunters are urged to cherish the sighting and refrain from harming the animal.

Gift Spurs War on Poachers: An Apple III computer has been donated to Operation Game Thief, Louisiana's citizen-managed antipoaching campaign, by the Sweet Lake Land & Oil Co., Lake Charles. Inspecting it in Baton Rouge are Col. Winton Vidrine, Wildlife and Fisheries enforcement chief, and OGT President W.H. Chapman of Sulphur. Wildlife-law violations may be called in to OGT toll-free, 1-800-442-2511.

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Bayou Kitchen

by Wayne Miller

Photo by Ken Glazer

Glazed Breast of Chicken

1 tblsp. olive oil
3 boneless chicken breast halves skinned and pounded to thickness of 1/4 inch
1 egg, beaten to blend
1/2 cup dry breadcrumbs
1/4 cup Grand Marnier
1/4 cup orange marmalade
1 tsp. fresh lemon juice
1/4 tsp. Worcestershire sauce
1/4 tsp. Dijon mustard
1/4 tsp. garlic powder

Heat oil in medium skillet over medium-high heat. Dip chicken in egg, then in crumbs to coat well. Shake off excess. Cook until browned, about 1-1/2 minutes per side. Remove from skillet; keep warm.

Add Grand Marnier to skillet. Bring to boil, scraping up browned bits. Blend in marmalade. Mix in remaining ingredients. Reduce heat to low. Return chicken to skillet. Cover and simmer 10 minutes. Baste chicken with glaze and continue cooking until juices run clear when pierced with tip of sharp knife, about 5 minutes; check frequently to avoid burning glaze. Serves 2.

Spinach, Broccoli and Tuna Salad

2 garlic cloves, halved
1/3 cup olive oil
1/4 cup freshly grated Parmesan cheese
1 tblsp. plus 1-1/2 tsps. fresh lemon juice
1 tblsp. plus 1-1/2 tsps. fresh lime juice
Freshly ground pepper
1 bunch broccoli, cut into florets, blanched
8 ounces spinach, cut julienne
1 small head red leaf lettuce, torn into bite-size pieces
1 six and a half ounce can water packed tuna, drained
8 cherry tomatoes, halved
1 ounce alfalfa sprouts (optional)
2 tblsps. bacon bits

Rub sides of large wooden bowl with cut side of garlic. Discard garlic. Whisk oil, cheese, lemon and lime juices and pepper in same bowl. Add remaining ingredients and toss. Serves 4.

Sherried Cauliflower Soup

1 head cauliflower, cut into florets, steamed until tender
1/4 cup (1/2 stick) unsalted butter
2 medium yellow onions, chopped
4 garlic cloves, pressed
1 14-1/2-ounce can chicken broth
1/2 cup cream sherry
1/2 tsp. freshly grated nutmeg
2 cups whipping cream
Salt and freshly ground white pepper
Freshly grated nutmeg

Puree steamed cauliflower in food processor until smooth, about 30 seconds. Melt butter in large saucepan or Dutch oven over medium heat. Add onions and garlic and stir until onions are translucent, about 5 minutes. Add cauliflower puree, broth, sherry and 1/2 teaspoon nutmeg and simmer 10 minutes. Add cream, salt and pepper. Simmer 10 minutes to blend flavors. Sprinkle with additional nutmeg. Serve hot. Serves 4.